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1918

CONTENTS

Page.

Extent of the Forests 1
Canada's Export Trade 2
Lumber Industry 25
Plants and employees 25
Pulp Industries 26
Sawmills 28
Domestic Consumption 33
Annual Cut and Productive Capacity 38
Lumber Business 39
Future of Export 39
Siberian Sawmills 43
Kinds of Lumber Cut 45
Lumber Industry 54
Summary of Export Lumber 55
Lumber Camps 56
Log Driving and Rafting 64
North Atlantic Region 69
Character of Forest 69
Area and Ownership 69
Lumber Industry 70

THE FORESTS OF EUROPEAN AND ASIATIC RUSSIA

Their Extent, Utilization, and Economic Importance

(With a map)

U.S. Forest Service

United States Department of Agriculture.

September 17, 1918.

By transfer
Dept. of State
DEC 7 1940

Foreign Trade Adviser
Economic Intelligence Files
& Woods Ben. Russia 107

THE ECONOMY OF EUROPEAN AND ASIATIC RUSSIA

Their Extent, Utilization, and Economic Importance

(With a map)

U.S. Forest Service

United States Department of Agriculture.

September 17, 1918.

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CONTENTS

	Page
Extent of the Forests	1
Russia's Export Trade	3
Lumber Industry	23
Plants and employees	23
Home Industries	23
Sawmills	24
Domestic Consumption	25
Actual Cut and Productive Capacity	26
Timber Regions	30
Northern Region	31
Character of Forest	31
Area and Ownership	31
Lumber Industry	32
Future of Export Trade	32
Dimensions Sawed	33
Sizes of Logs cut	33
Labor	34
Workmen's Cooperatives	34
Manner of Paying Labor	35
Lumber Camps	36
Log Driving and Rafting	36
North Baltic Region	40
Character of Forest	40
Area and Ownership	40
Lumber Industry	40

13548

CONTENTS

	Page
Extent of the Forests	1
Canada's Export Trade	2
Lumber Industry	22
Plants and employees	25
Logs Imported	25
Exports	24
Annual Cut and Productive Capacity	26
Timber Regions	30
Northern Region	31
Character of Forest	33
Area and Ownership	34
Lumber Industry	36
Future of Export Trade	36
Dimensions Saved	38
Sizes of Logs cut	38
Labor	34
Farmer's Occupations	34
Manner of Doing Labor	38
Lumber Camps	36
Log Driving and Rafting	36
North Pacific Region	40
Character of Forest	40
Area and Ownership	40
Lumber Industry	40

	Page
South Baltic Region	41
Nieman Region	43
Vistula Region	44
Region of the Rivers Dnieper and Dniester	46
Ural Region	48
Region of the Upper Volga	49
Region of Central Volga	52
Region of Lower Volga	53
The Interior Region	54
The Caucasus Region	56
The Turkestan Region	58
Siberian Region	60
Forest Regions	63
Northern Coniferous Forest	63
Mixed Coniferous and Hardwood Forest	65
Hardwood forest of the Prairie Region	65
Vertical Forest Belts of Caucasus	66
Vertical Forest Belts of Turkestan	67
Hardwood Forests of Amur Region	67
Methods of Selling Timber	69
Units of Measure	71
Conclusions	72

Page

South Baltic Region 41

Hilarus Region 43

Viretia Region 44

Regions of Sea Rivers Kalopar and Underfar 46

Ural Region 48

Regions of the Upper Volga 49

Regions of Central Volga 52

Region of Lower Volga 53

The Interior Region 54

The Caucasus Region 56

The Turkestan Region 58

Siberian Regions 59

Forest Regions 62

Northern Coniferous Forest 63

Mixed Coniferous and Hardwood Forest 65

Hardwood Forest of the Prairie Regions 65

Vertical Forest Belts of Caucasus 66

Vertical Forest Belts of Turkestan 67

Hardwood Forests of Asian Region 67

Methods of Felling Timber 69

Units of Measure 71

Conclusions 72

THE FORESTS OF EUROPEAN AND ASIATIC RUSSIA

Their Extent, Utilization, and Economic Importance

(With a map)

The Extent of the Forests

The total forest area of European and Asiatic Russia is estimated to be in the neighborhood of 1,320,000,000 acres, exclusive of Finland. With Finland, the total forest area amounts to 1,357,000,000 acres. This area is distributed about as follows:

	Acres
European Russia	475,300,000
Caucasus	19,354,000
Asiatic Russia (including Turkestan)	825,198,000
Total	1,320,052,000

Not all of this land classed as forest is actually bearing forests. Much of it is swamp, lakes, large burns, and other waste land. In European Russia 80 per cent of the total land classed as forest is actually productive forest land -- in Caucasus, 85 per cent and in Asiatic Russia, only 30 per cent. On this basis the actual forest bearing land in European and Asiatic Russia is in the neighborhood of 728,365,000 acres distributed as follows:

	Acres
European Russia	382,645,000
Caucasus	18,195,000
Asiatic Russia	333,527,000

By ownership the productive forests are distri

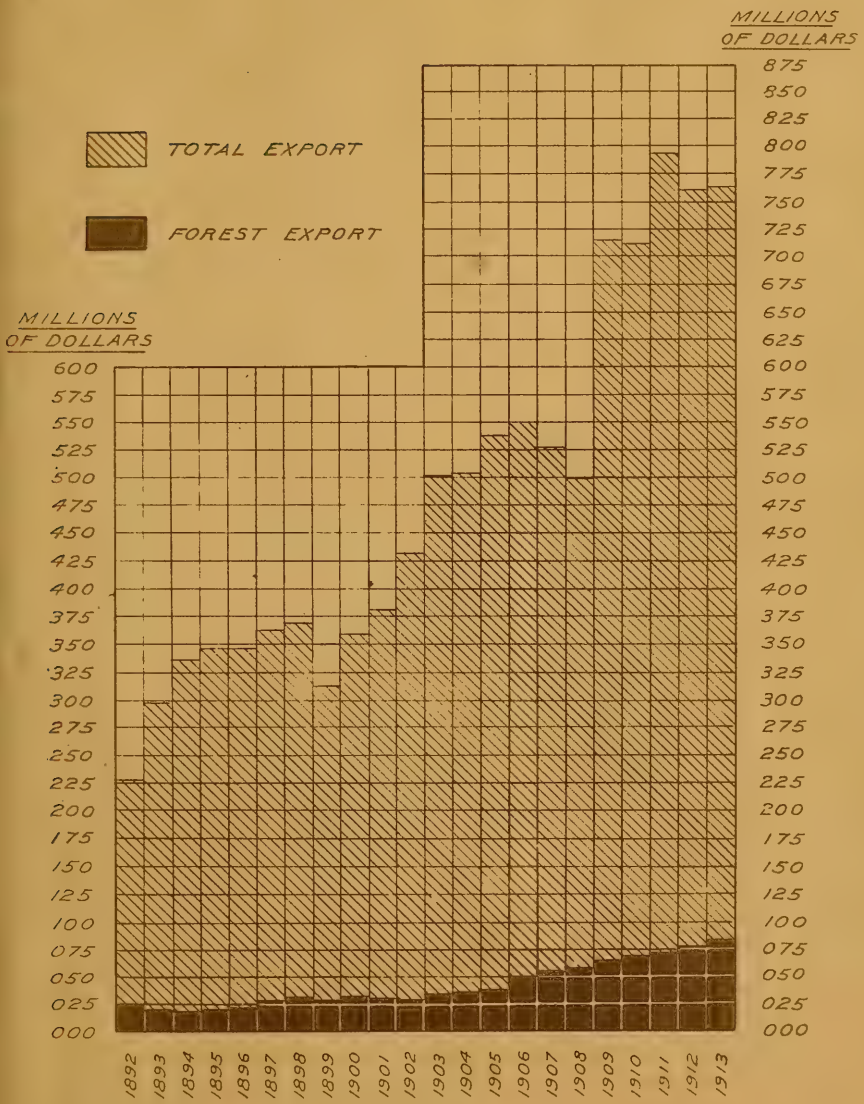
as follows:

Region	State	Private	Peasant	All other	Total
	Acres	Acres	Acres	Acres	Acres
European Russia	249,509,700	97,071,900	29,209,700	6,853,400	382,644,7
Caucasus Region	8,000,000	4,193,000	—	—	12,193,0
Asiatic Russia (Including Turkestan	249,781,000	—	—	83,746,000	333,527,0
	509,290,700	101,264,900	29,209,700	90,599,400	728,364,7

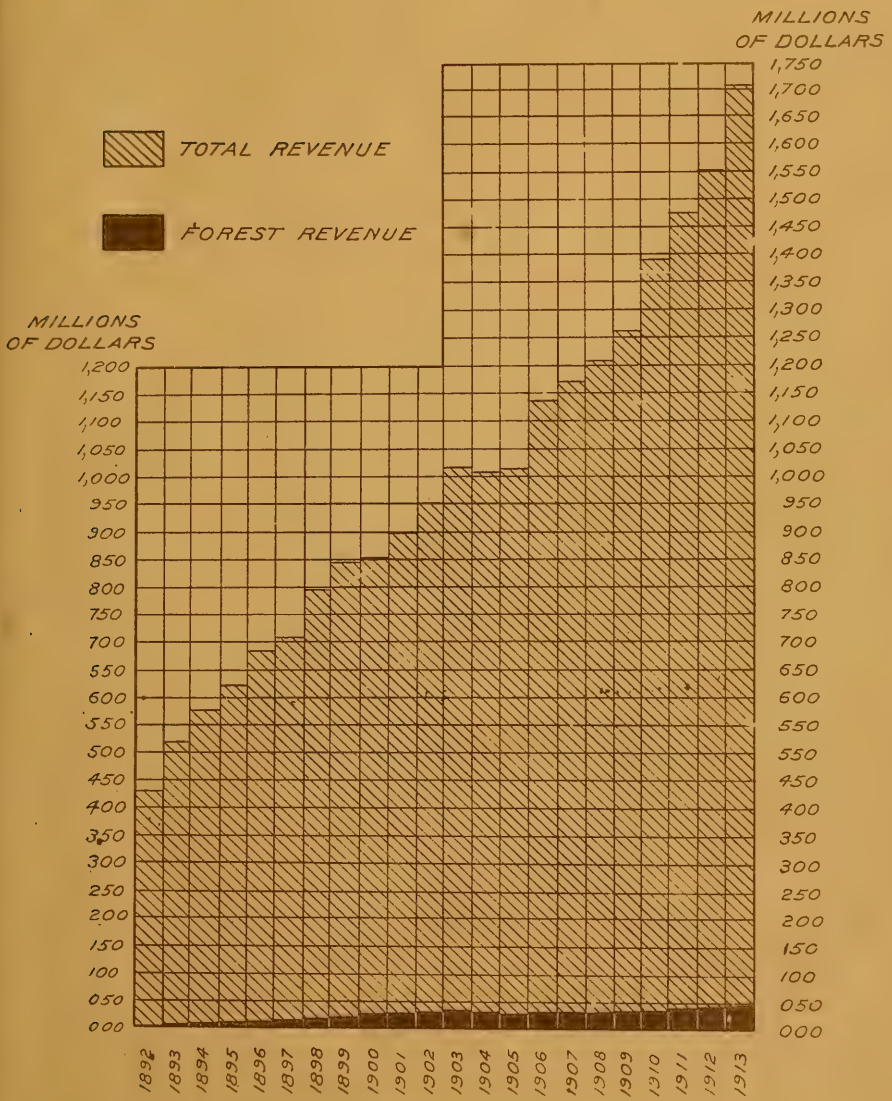
Russia's Export Trade

Russia for a long time has been engaged in timber export. The timber export has been growing at a much more rapid rate than the total export or the export of any one other product. Thus, for the period since 1800 to 1913, the value of Russia's entire export has increased 81 times, while the value of the timber export increased 186 times. The export of grain for this period increased only 44 times. The timber trade in Russia before the war stood next to the grain trade. Its growth has been particularly phenomenal during the last ten years. The comparative growth of Russia's entire export trade and of the export of forest products may be obtained from the following diagrams:

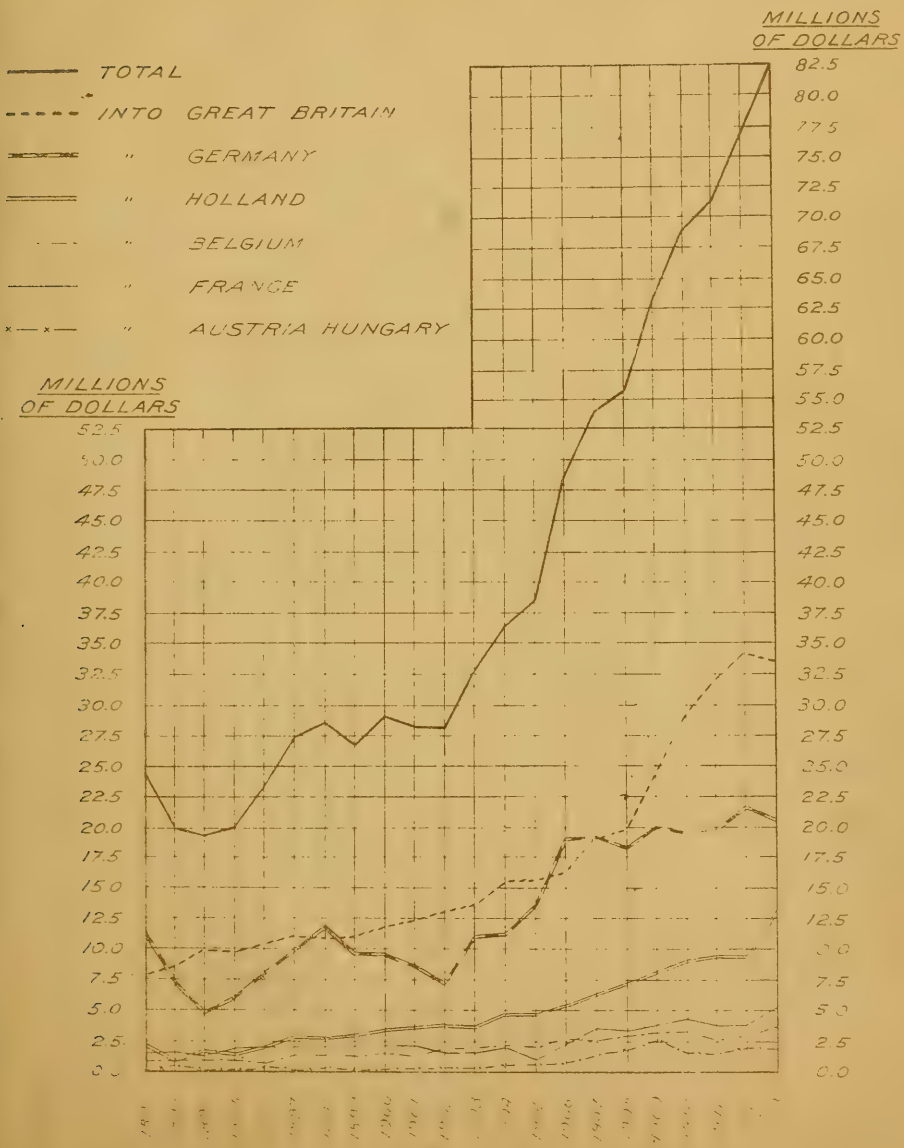
TOTAL EXPORT AND FOREST EXPORT



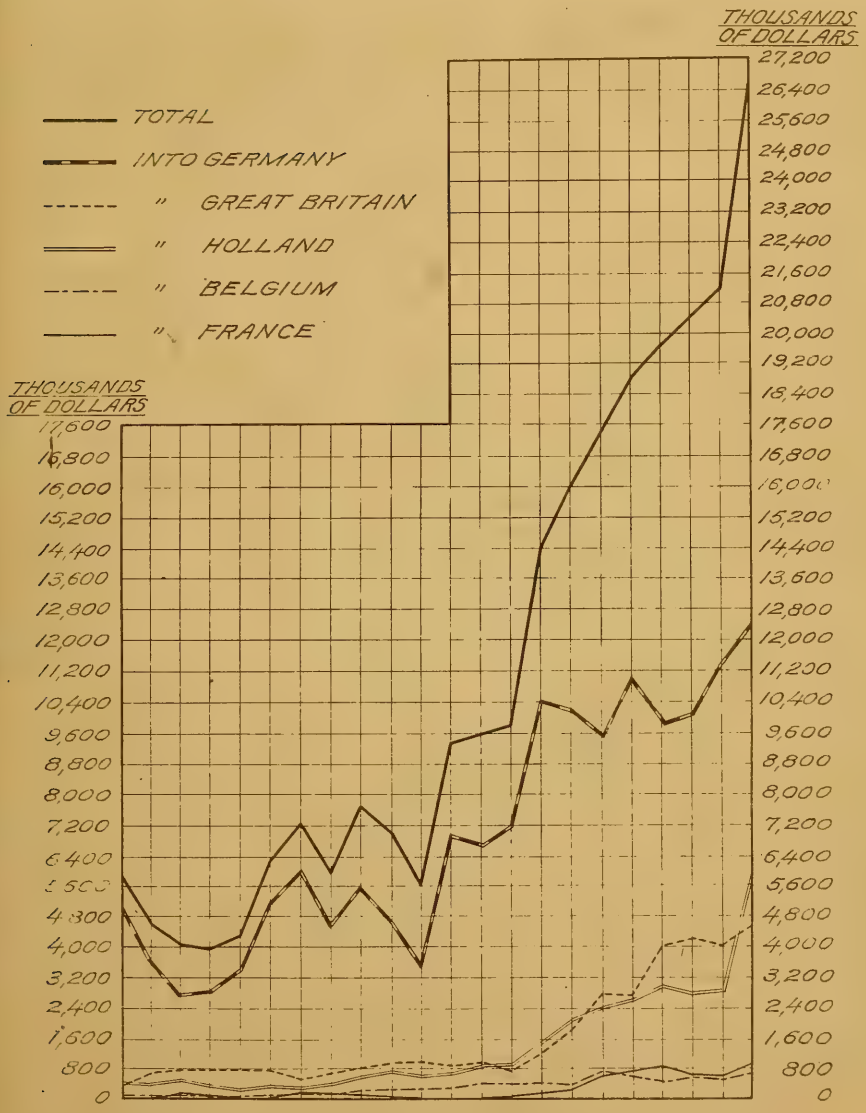
GROWTH OF TOTAL REVENUE AND FOREST REVENUE



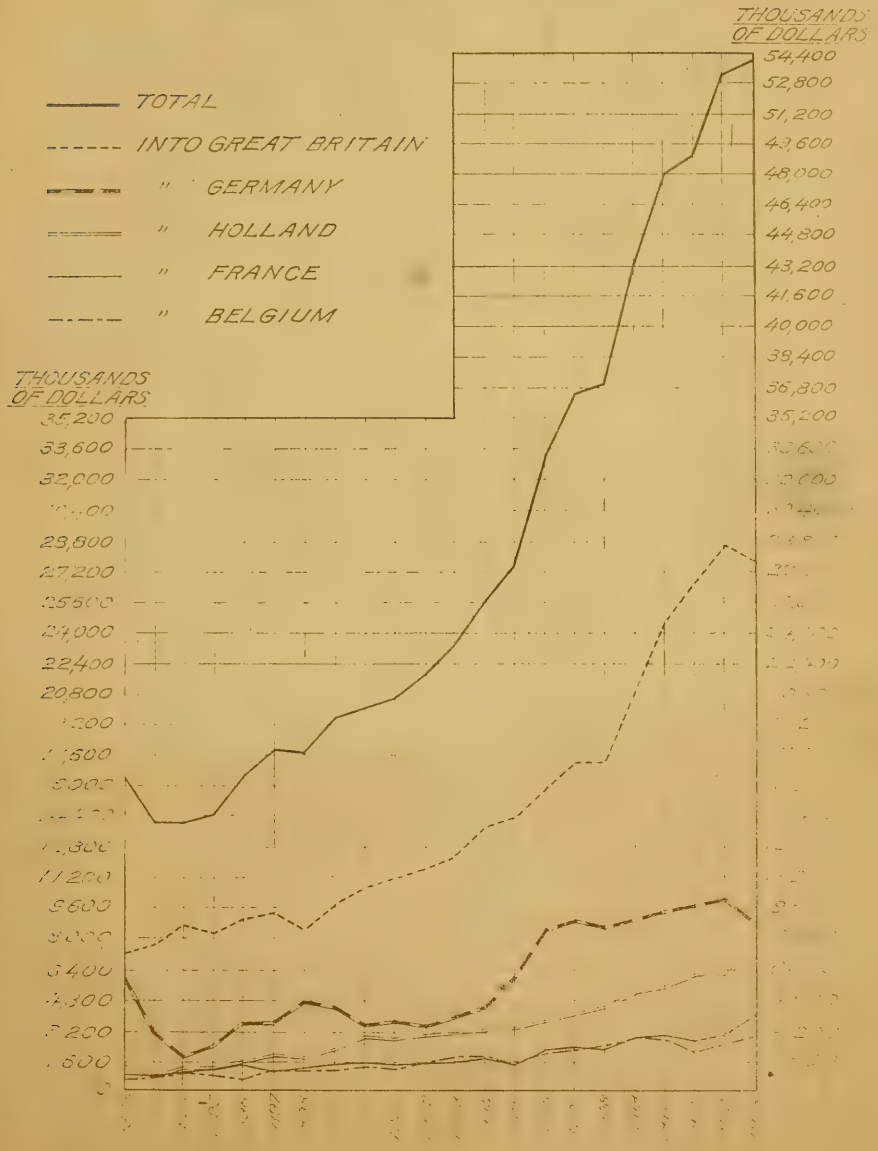
EXPORT OF FOREST PRODUCTS FROM RUSSIA



EXPORT OF ROUND (RAW) TIMBER FROM RUSSIA



EXPORT OF MANUFACTURED FOREST PRODUCTS FROM RUSSIA



The extent of Russia's forest export may be judged from the fact that the average annual export for the five-year period between 1903 and 1907 amounted to 5,241,636 tons, valued at $42,241,500. The average annual export for the period between 1908 and 1912 amounted to 7,404,158 tons, valued at $67,087,500. The kinds of forest products and the countries to which they are exported are shown in the following tables:

Total Export

		Tons*	Valu
1	Logs - oak	101,610	$1,467,
2	Logs - pine	614,970	3,514,
3	Logs - spruce	328,221	2,286,
4	Logs - other species	279,756	2,3[illegible],
5	Poles	21,006	124,
6	Beams	270,720	3,407,
7	Boards and ties	3,742,200	45,938,
8	Mine timber	792,306	5,033,
9	Matchwood	11,736	219,
10	Wood pulp	1,627,804	9,893,
11	Cordwood of different species	123,894	484,
12	Walnut and palm wood	5,589	294,
13	Other woods not classified	42,354	1,477,
14	Staves	117,648	2,021,
	Total	7,979,814	$78,542,

*One ton equals 2,000 pounds

Kinds of Forest Products and Countries to Which They Are Exported
1913

		Total Export		Exported to Germany			Exported to Austria-Hungary			Exported to Belgium			Exported to Great Britain			Exported to Holland			Exported to France		
		Tons*	Value	Tons	Per cent of the total export	Value	Tons	Per cent of the total export	Value	Tons	Per cent of the total export	Value	Tons	Per cent of the total export	Value	Tons	Per cent of the total export	Value	Tons	Per cent of the total export	Value
1	Logs - oak	101,610	$1,467,000	83,556	82.2	$1,247,000	10,476	10.3	$111,500	270	0.3	$3,500	2,592	2.6	$41,000	4,590	4.5+	$62,500	126	0.1	$1,500
2	Logs - pine	614,970	3,514,500	594,254	96.6	3,374,500	8,010	1.3	25,000	540	0.1	5,500	4,788	.8	42,500	5,778	.9	53,000	1,620	.3	14,000
3	Logs - spruce	328,221	2,286,750	281,772	85.9	1,863,000	9	.0	250	186	.0	1,000	2,502	.8	23,500	42,066	12.8	376,000	1,746	.5+	22,000
4	Logs - other species	279,756	2,382,000	137,628	49.2	977,500	15,408	5.5+	128,000	2,196	.8	23,500	8,046	2.9	67,000	115,938	41.4	1,179,500	540	.2	6,500
5	Poles	21,006	124,000	2,358	11.2	15,500	180	.9	500	1,926	9.2	18,000	8,118	38.6	33,000	7,344	35.0	47,500	1,080	5.1	9,500
6	Beams	270,720	3,407,000	116,712	43.1	1,340,500	3,438	1.3	40,500	16,524	6.1	144,000	59,760	22.1	1,183,500	72,846	26.9	668,500	1,440	.5+	30,000
7	Boards and ties	3,742,200	45,938,500	621,576	16.6	6,531,000	48,060	1.3	730,500	224,352	6.0	2,812,500	2,062,566	55.1	25,900,000	516,924	13.8	6,264,500	268,722	7.2	3,600,000
8	Mine timber	792,306	5,033,000	38,592	4.9	290,000	234	.0	2,000	58,716	7.4	443,500	518,364	65.4	3,084,500	99,000	12.5-	614,000	77,400	9.8	599,000
9	Matchwood	11,736	219,000	1,404	12.0	24,500				1,080	9.2	20,000	3,636	31.0	66,000	792	6.7	13,500	4,824	41.1	95,000
10	Wood pulp	1,527,804	9,893,500	752,886	49.3	4,369,500	84,060	5.5+	690,000	17,190	1.1	130,500	161,910	10.6	972,500	480,960	31.5-	3,475,000	30,798	2.0	256,000
11	Cordwood of different species	123,894	484,000	46,530	37.6	186,500	3,474	2.8	10,500	3,114	2.5+	18,500	64,926	52.4	243,000	4,842	3.9	22,000	1,008	.8	3,500
12	Walnut and palm wood	5,589	294,250	360	6.5	22,000	9	.1	250				4,104	73.4	210,500	360	6.5-	18,500	756	13.5+	42,000
13	Other woods not classified	42,354	1,477,500	6,876	16.2	225,500	918	2.2	10,000	1,350	3.2	57,000	27,468	64.9	953,500	1,494	3.5+	70,500	4,248	10.0	161,000
14	Staves	117,648	2,021,000	36,882	31.4	650,000	11,754	10.0	175,000	3,654	3.1	73,500	33,048	28.1	631,000	5,094	4.3	54,000	27,216	23.1	437,500
	Total	7,979,814	$78,542,000	2,721,366	34.1	$21,117,000	186,030	2.3	$1,924,000	331,038	4.2	$3,751,000	2,961,828	37.1	$33,451,500	1,358,028	17.0	$13,019,000	421,624	5.3	$5,279,500

*One ton equals 2,000 pounds

KINDS OF FOREST PRODUCTS EXPORTED

1913

	Amount Tons	Per cent of total	Value	Per cent
1. Logs - oak	101,410	1.3	$1,467,000	1.9
2. Logs - pine	614,970	7.7	3,314,300	4.3-
3. Logs - spruce	328,221	4.1	2,236,750	2.9
4. Logs - other species	279,756	3.5+	2,382,000	3.0
5. Poles	21,006	.3	124,000	.1
6. Beams	270,720	3.4	3,407,000	4.3
7. Boards and ties	3,742,800	46.9	45,958,500	58.5-
8. Mine timber	792,306	9.9	5,035,000	6.4
9. Matchwood	11,736	.1	219,000	.3
10. Pulpwood.	1,527,804	19.1	9,895,500	12.6
11. Cordwood of different species	155,094	1.9	484,000	.6
12. Walnut and palmwood	5,509	.1	294,250	.4
13. Other woods not classified	43,354	.5+	1,477,500	1.9
14. Staves	117,648	1.5-	2,021,000	2.6
Total	7,979,814	100.0	78,542,000	100.0

More than half of the entire Russian timber exported, by quantity, consists of raw or half manufactured products. What it means for Russia's lumber industry may be judged from the fact that the average value of one ton of logs is $7.30, while the average value of one ton of manufactured is $18.38. Even such general figures show how unprofitable the export of raw material or semi-manufactured products is from a national economic standpoint. The export of the entire timber products in a manufactured form would increase its value at least by 35 or 40 per cent and this additional value would have remained in the country in the form of wages to the Russian worker.

Boards in the Russian export trade play the most important part, amounting to 47 per cent of the entire export in quantity and 39 per cent in value. Most of the boards (55 per cent) are shipped to Great Britain, which is the chief consumer of Russia's own timber. The shipment of boards has been increasing to Holland, France, and Belgium, although Germany has also been increasing the import of Russian boards, but largely in the form of ties, which are classed with boards.

Logs play a very important part in the export trade of Russia. They form about 22 per cent of the entire timber export by quantity and 14 per cent in value. The logs go almost entirely to Germany; thus of all the pine logs exported from Russia, nearly 97 per cent were shipped to Germany, of spruce logs, 84; of oak logs, 82; and of logs of all other

species, 30 per cent. Lately there has been a growing demand for Russian oak logs from Holland, Great Britain, and Austria-Hungary.

Mine props and mine timbers in general form a very important item in Russia's export trade. Thus in 1913 the mine timber amounted to 792,306 tons, valued at $8,055,000. The bulk of this material goes to Great Britain (65 per cent), France, Holland and Belgium.

Matchwood and pulp wood are being exported in increasing quantities, chiefly into Germany, Austria-Hungary, Holland, Sweden, and lately into Norway, that is, to those countries which are engaged in the export trade in pulp, paper and matches. Of all the pulp wood exported, nearly 90 per cent went to Germany. For the period between 1899 to 1913 the export of wood pulp increased in value from $317,000 to $10,900,000. The increase became particularly noticeable in 1905. The figures for wood pulp do not tell the exact amount of pulp wood exported since part of it is exported in the form of cordwood, particularly spruce cordwood.

The export of cordwood from Russia is very large; thus for 1913 spruce cordwood amounted to 45,652 tons, valued at $152,000. Pine cordwood was exported to the amount of 14,981 tons, valued at $64,000, and of all other kinds, 65,360 tons, valued at $280,000, or a total of 125,994 tons, valued at $496,000. The spruce cordwood is shipped principally to Germany. The pine cordwood is distributed more or less uniformly among several countries.

All others are sent chiefly to Great Britain.

Staves are also an important item of Russia's export trade, having been exported in 1913 to the amount of 117,648 tons, valued at $2,031,000. Staves are exported chiefly to Great Britain, Germany, France, Austria-Hungary, Belgium and Holland.

The Russian export trade is carried on through the Baltic ports, the Russian-Prussian frontier, White Sea ports, Russian-Austrian frontier, Black Sea ports, Azov ports, and Russian-Rumanian frontier. The distribution of the exports through the different ports, as shown by the available figures for 1911, is as follows:

Ports and Frontiers	Amount of Exports Tons	Per cent of the total export
Baltic ports	3,854,479	52.1
Russian-Prussian frontier	2,033,449	27.5
White Sea ports	1,183,713	16.0
Russian-Austrian frontier	199,918	2.6
Black Sea ports	128,568	1.7
Azov ports	716	0.1
Russian-Rumanian frontier	14	--
Total	7,410,653	100.0

It is clear that almost the entire export lumber trade before the war was carried on through the Baltic and White Sea ports or by land through the Russian-Prussian frontier.

A more detailed analysis of the export trade through the different ports is presented in the following set of tables:

Baltic Ports

Name of Port	Raw Material Tons	Per cent	Manufactured Material Tons	Per cent
Riga	298,116	17.6	1,396,620	82.4
Petrograd and Kronstadt	687,[illegible]	48.6	728,[illegible]	51.5
Windau	185,078	54.9	150,[illegible]	45.1
Libau	88,362	42.3	120,708	57.7
Other ports of Baltic Sea	149,580	70.6	62,064	29.4
Total	1,408,388	36.4	2,456,116	63.6

An interesting feature of the export trade through the Baltic ports is that, on a whole, the amount of manufactured products exceeds the amount of raw material. This is particularly true of the port of Riga.

White Sea Ports

Name of Port	Raw Material		Manufactured Material	
	Tons	Per cent	Tons	Per cent
Archangel	251,434	28.6	588,870	71.4
Onega	46,908	42.3	65,792	57.7
Mezen	2,260	4.7	46,312	95.3
Western ports of the White Sea	5,032	2.7	177,676	97.3
Total	305,650	25.8	878,950	74.2

The White Sea ports on a whole show an excess of export of manufactured products over raw material. Most of the product that comes through the White Sea ports goes to England in the form of sawn lumber.

Black Sea Ports

Name of Port	Raw Material		Manufactured Material	
	Tons	Per cent	Tons	Per cent
Odessa	8,682	6.8	110,382	93.2
Other ports of the Black Sea	2,892	50.2	2,874	49.8
Total	10,574	8.6	112,896	91.4

Similarly, the ports of the Black Sea show an excess of export of manufactured products over raw materials. Most of the material is shipped to the Near East and Mediterranean countries.

Russian-Prussian Frontier

Raw Material		Manufactured Material	
Tons	Per cent	Tons	Per cent
1,606,633	78.8	431,988	21.2

This is the most important channel through which the export trade between Russia and Germany takes place. Nearly 60 per cent of the entire wood export to Germany goes through this frontier and 78.8 per cent of all the product thus exported to Germany is in the form of raw material, and only 21.2 per cent manufactured or semi-manufactured. Nothing illustrates the economic policy of Germany toward the timber resources of Russia better than these figures. The amount of raw timber exported from Russia is on the increase. For the period between 1900 and 1913 the export of logs has doubled while the export of the manufactured product for the same period has decreased both in quantity and value. The chief aim of Germany is to get from Russia as much as possible of the raw product for the development of its own lumber industry. In this Germany is favored by river transportation. She built her sawmills and wood pulp mills at the mouth of the rivers, whose headwaters are in Russia and which are either drivable or navigable for their entire length. Because of this cheap water transport, Russian timbermen find it often more advantageous to float the timber to Germany than to ship it to mills and factories in Russia itself.

Nearly seven-eighths of all the logs exported from Russia are sent to Germany. A large number of logs which are sent by Russia to Holland also find their way into Germany through the Rhine. Russian is a food a large number of Germany's sawmills and the price of these logs is controlled chiefly by the demand of the German lumber industry. The demand for logs in Russia itself affects the price but little since the Russian sawmills utilize second grade logs while the choice logs are shipped to the German mills. Among the species which are most exported to Germany, the pine still occupies the first place, and next to it are logs of other species such as spruce and oak. About 80 per cent of all the wood exported for the manufacture of pulp, paper and matches goes to Germany; over 33 per cent of all the sawwood exported from Russia goes to Germany. The German economic policy toward the Russian timber supplies is well shown in the timber tariff adopted in 1904, just after the conclusion of the Russo-Japanese war:

	Import duty per metric ton (1,000 kg.)
Pulpwood	Free
Round timber (logs)	$ .88
Oak staves	.44
Hewn timber	.88
Sawn lumber	1.66

Russian-Austrian Frontier

Raw Material		Manufactured Material	
Tons	Per cent	Tons	Per cent
137,592	68.8	62,334	31.2

The character of export through the Russian-Austrian frontier is similar to the trade between Russia and Germany, namely, that the amount of raw material (68.8 per cent) is much larger than the amount of manufactured products exported from Russia (31.2 per cent). Since, however, Austria possesses large timber resources of its own and is a large timber exporter, the timber trade between the two countries is not large and the tariff agreement does not affect materially the development of the lumber industry in Russia.

The Russian export trade was nourished chiefly by the forests of European Russia and particularly by those in the provinces close to the frontier, namely, Minsk and South Baltic regions, Russian Poland, and the region of the Rivers Dnieper and Dniester. These are the regions in which private forests predominate and in the past have been severely overcut. As a result of the war, 16,000,000 acres in this territory have been reported devastated. If this is true the source of future export trade will naturally be transferred to the forests gravitating toward the White Sea. The ports of Archangel and Alexandrovsk are therefore destined to assume a greater commercial importance than before.

The forests of the Caucasus region furnish timber products to the markets of the near east and the Mediterranean Sea. Their exploitation, however, especially of the forests along the Black Sea coast, demands the expenditure of a great deal of capital for the construction of railroads to make the mountainous forests accessible.

The utilization of the forests of Asiatic Russia has also hardly begun. Only recently the forests of the Governments of Tobolsk and Tomsk, which are within proximity of railroads, have begun to be exploited and the product shipped through Petrograd or Archangel to western Europe. The product, however, which can justify its transportation abroad must be of the highest grade since it alone can stand the expensive freight.

The forests of Turkestan are hardly touched yet because of lack of water and railroad transportation. The only product so far exported from Turkestan on a large scale is the black walnut burrs. This material, which yields a very finely grained veneer, successfully stands distant transportation but recently, because of reduced demand for this type of veneer, the trade in it has become less profitable.

The vast forest region of the Government of Tobolsk and the provinces of Trans-Baikal and Jakutsk, because of lack of convenient transportation, will for a long time yet remain inaccessible for export trade.

Only the forests of the Far East are favorably situated for foreign export because of the facilities for transportation offered by the River Amur and other rivers flowing into the Pacific Ocean. There is already a fairly extensive local lumber industry which exports timber from several ports on the coast of the Pacific Ocean. Thus, in 1910 there was exported from Vladivostok 7,200 tons of forest products and in 1911 this export was increased to 17,100 tons. This timber is generally exported to Japan and China but the higher grades went to western Europe, particularly Great Britain. In addition, there has been exported to Australia from the Bay of Formey about 110,000 cubic feet of spruce and "cedar" (Pinus cembra) timber into Australia and from the Bay of St. Olga 374,000 cubic feet of mine props. In 1911 there was begun an export trade (about 100,000 cubic feet) from the Port of Posiet. The export trade started from it in 1906 when there appeared several large lumbermen who organized the manufacture and shipment of timber into Australia and China. China undoubtedly offers a very large market for Russian timber. According to the Russian authorities, China imported in 1911 about $8,000,000 worth of timber products, this import coming from Japan and the United States. The Chinese market is not very exacting since its chief requirement is cheapness. The Chinese market, therefore, could be satisfied with second-grade material made up from defective timber or even tops, which would be of considerable advantage in the proper management of the Russian forests since they, like

those in our own country, suffer chiefly from lack of markets for the second grades.

There were before the war, in the provinces of Amur and Primorsk and on the Island of Sagahalien, about 40 private sawmills and 3 government sawmills, which worked chiefly for local markets.

The Lumber Industry

Number of Plants and Workmen Employed

The lumber industry of Russia has developed rapidly within the last two decades. The latest figures available are for 1911 when the number of sawmills and other wood-using plants operated by power was 2,166, employing 111,703 workmen. The growth of the industry may be judged from the fact that for the period between 1900 and 1911 the number of sawmills and veneer factories increased 88 per cent and the number of workmen in them 87 per cent. The average number of workmen employed in a sawmill is about 45, although there are sawmills which employ from 300 to 1,000 men.

"Home Wood-Using Industries"

Besides the workmen employed in the sawmills and wood-using plants, and subject to inspection by factory inspectors, there is a great number of small industries carried on in the homes of the peasants. According to the best estimates available, there are not less than 377,000 people engaged in the "home" wood-using industries. Among the different occupations these workmen are distributed something as follows:

	In the "home industry"	In factories
In the manufacture of bast and birch bark	114,854	
In the production of cooperage	66,256	4,135
In basket making	55,888	
In wagon making	72,023	
In cabinet work	50,500	18,544
In wood carving	10,000	1,758

Thus, only in the case of cabinet work, which includes the manufacture of doors, window frames, and furniture, does the factory production show any considerable number of men employed. Most of the other wood-using industries, particularly the making of wooden ware and manufactures from bast and birch bark, are in the hands of the peasants working at home. This is largely due to the cheaper prices for raw material which are found in the vicinity of the villages and to the cheap water transportation. In spite of the rapid industrial development of Russia, these small home wood-using industries will, for a long time, remain a feature of Russia's lumber industry and compete with the large wood-using plants.

Sawmills

The sawmills which work chiefly for export trade are, as a rule, steam operated, well built, and provided with up-to-date machinery. This is mostly of the sash or gang saw type with one or several frames. The sawmills are

provided with various circular saws for edging, slabbing, and cutting. The machinery is largely supplied by Molinders, Stockholm, or Jansen and Dahl, Christiania. There is electric light at almost all of the mills, as well as mechanical workshops for repairs. Many of the mills, particularly in the northern region, are owned by Swedes. Side by side, however, with the up-to-date steam sawmills there are throughout Russia most primitive sawmills, even whipsawing is quite common. The total power employed in the sawmill and wood-using industries of Russia is not less than 100,000 horsepower. While Russia's woodsmen are skilful and experienced workers, there is no large class of sawmill workmen in Russia. This is a point that should be considered in any organization of the Russian lumber industry.

Domestic Consumption

The total annual cut from all forests of European Russia is in the neighborhood of 7,000,000,000 cubic feet (about 56 billion board feet or 140,000,000 tons of wood). If from this amount is deducted the annual export amounting to 400,000,000 cubic feet (about 8,000,000 tons) the remainder is a home consumption of 6,600,000,000 cubic feet. This, with a population of 112,000,000, gives a per capita consumption of 60 cubic feet. Russia's annual consumption of wood is enormous and it plays a more vital part in her industrial life than even in this country.

It is used to a large extent as fuel for railroad locomotives, it is the chief fuel for the metallurgical industry of the Ural Mountains and other districts; it is the only fuel for domestic purposes of the largest part of Russia, being used even in such large cities as Moscow and Petrograd; and it is the source of fuel for numerous local wood-using industries. The extent of the use of wood in railroads and metallurgical industries, as well as its comparative price with other fuel (reduced to the same caloric unit), may be gathered from the accompanying diagram, borrowed from Russian sources.

Actual Cut and Productive Capacity of Forests

A comparison of the annual growth and annual cut per acre in the Russian forests shows that at present only a fraction of the annual growth is actually used. The reason is that the bulk of the forests is located in regions but poorly developed and with no means of transportation. According to the statement of the Russian administration, only a small part of the annual growth can now be used on account of lack of market. The condition in 1912 was as follows:

1. In the state forests of European Russia (over a forest area of 349,509,700 acres) the annual growth was 9.0 cubic feet per acre, of which only 61 per cent, or 5.5 cubic feet per acre could be actually marketed and used.

2. In the state forests of the Caucasus, with 8,000,000 acres of forest, out of a possible yield of 30.5 cubic feet per

Миллионы пудовъ.

CONSUMPTION OF ALL KINDS OF FUEL BY RAILWAYS.

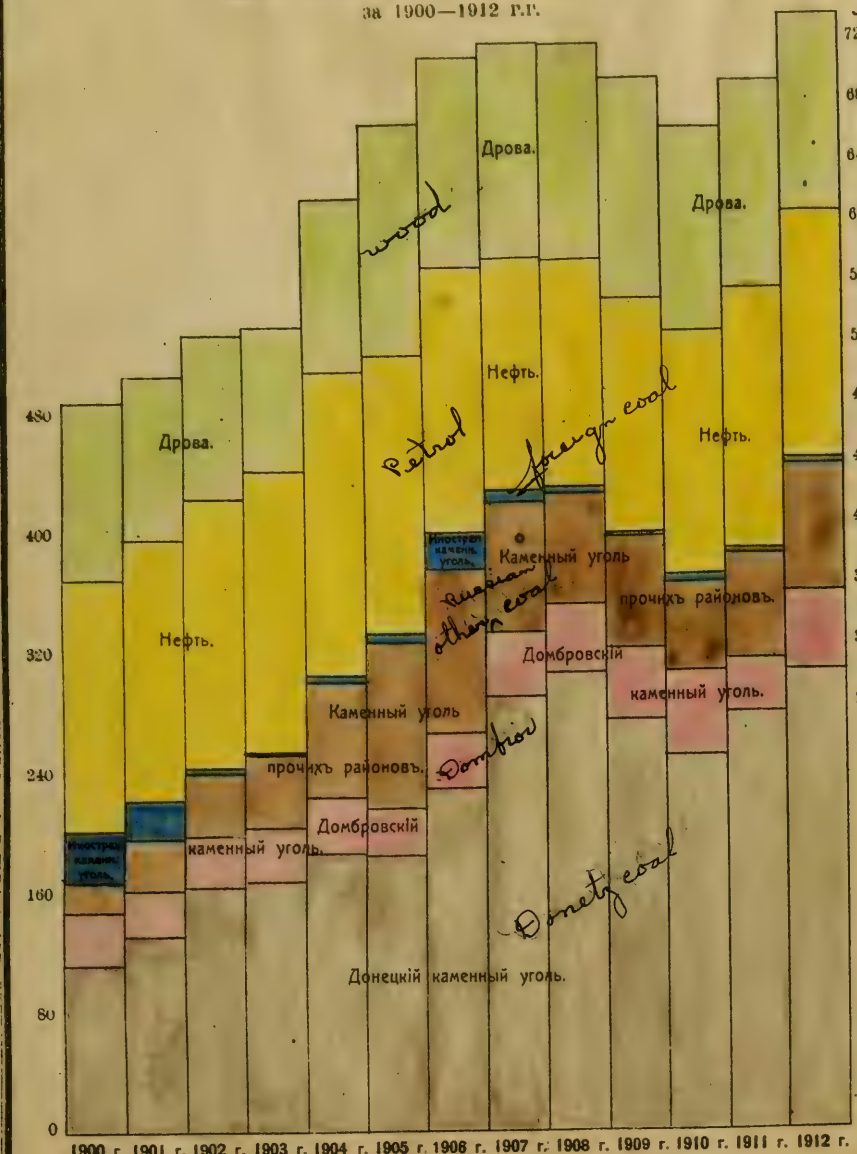
Миллионы пудовъ.

Потребленіе всѣхъ видовъ топлива желѣзными дорогами

(въ переводѣ на донецкій каменный уголь по теплопроизводительности)

за 1900—1912 г.г.

millions of poods.

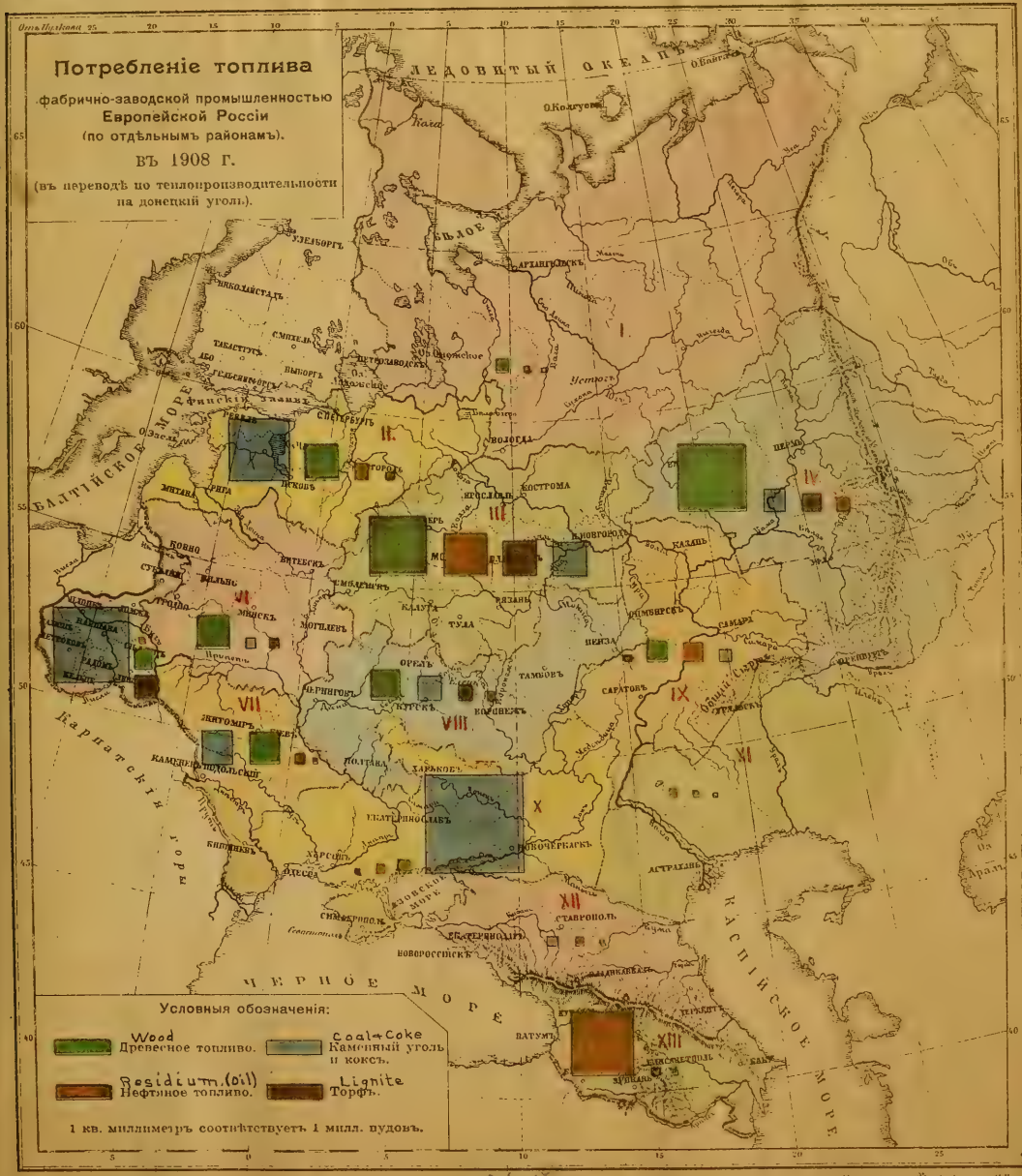


КАРТОГР. ЗАВ А. КЛЬНИНА. П.Г. ПРЯЖКА 5

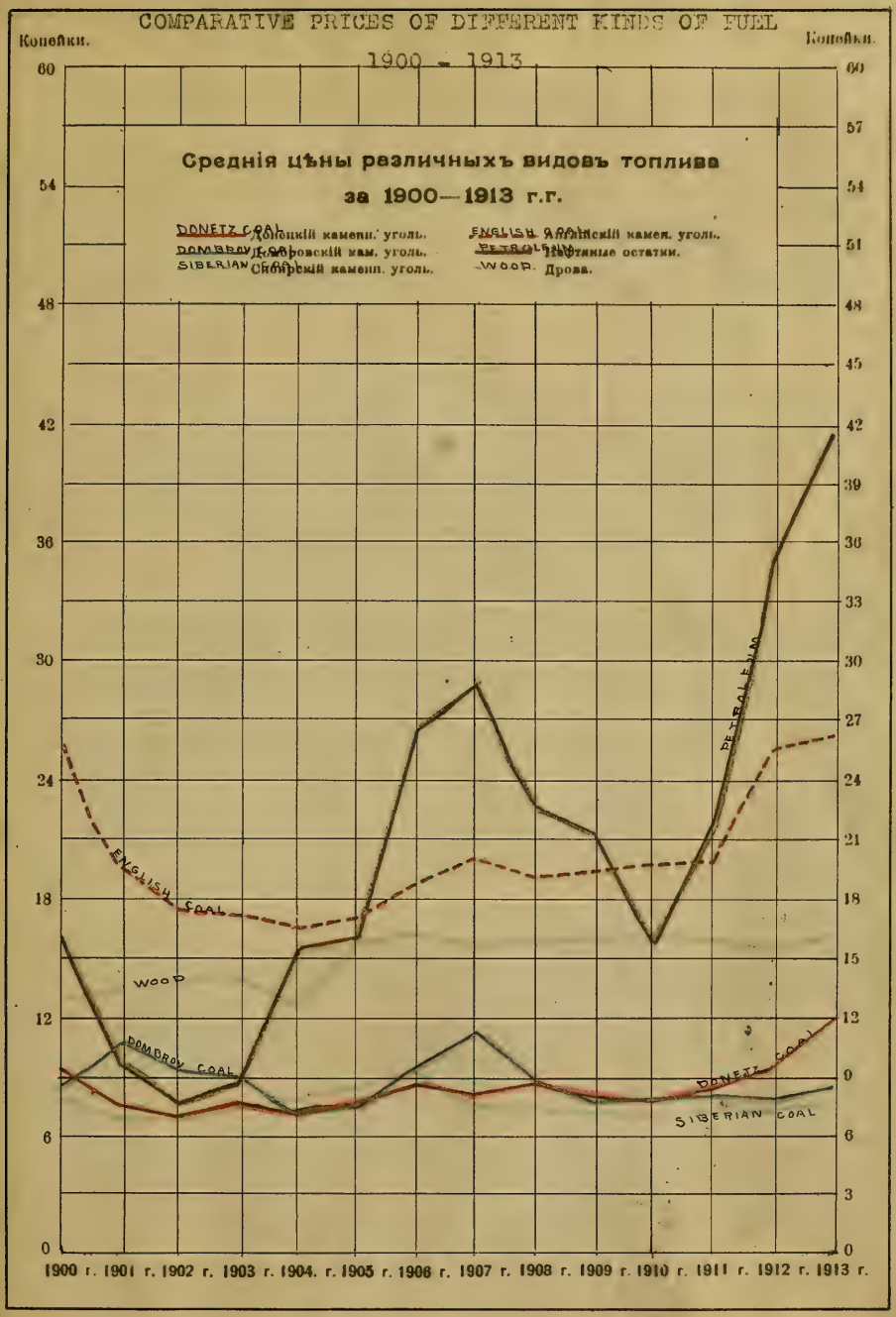
COMPARATIVE PRICES OF DIFFERENT KINDS OF FUEL

Копейки. Копейки.

CONSUMPTION OF FUEL IN RUSSIA BY METALLURGICAL INDUSTRIES



Картогр. зав. А. Ильина. III.


COMPARATIVE PRICES OF DIFFERENT KINDS OF FUEL
1900 - 1913
Копейки.
Копейки.
Средния цѣны различныхъ видовъ топлива
за 1900—1913 г.г.
DONETZ COAL. Донецкій каменн. уголь.
DOMBROV COAL. Домбровскій кам. уголь.
SIBERIAN COAL. Сибирскій каменн. уголь.
ENGLISH COAL. Англійскій камен. уголь.
PETROLEUM. Нефтяные остатки.
WOOD. Дрова.
60
57
54
51
48
45
42
39
36
33
30
27
24
21
18
15
12
9
6
3
0
ENGLISH COAL
WOOD
DOMBROV COAL
PETROLEUM
DONETZ COAL
SIBERIAN COAL
1900 г. 1901 г. 1902 г. 1903 г. 1904. г. 1905 г. 1906 г. 1907 г. 1908 г. 1909 г. 1910 г. 1911 г. 1912 г. 1913 г.

acre, only 19 per cent, or 3.9 cubic feet per acre, was actually used.

3. In the State forests of Siberia, with an area of 349,781,000 acres, out of a possible yield of 4.4 cubic feet per acre only 49 per cent, or .4 cubic foot, was actually cut and used.

How far the actual utilization of the Russian state forests fall below their possible cut is well illustrated by the following figures of the amount of timber designated to be cut and actually cut in the year 1913:

State Forests 1913	Amount of timber designated to be cut. Cubic feet.	Amount of timber actually cut Cu. ft.	Per cent
European Russia	2,855,261,880	1,577,595,566	61.1
Caucasus	164,370,580	30,942,780	18.8
Asiatic Russia	1,118,496,440	+98,436,580	8.8
Total	3,530,228,900	1,506,974,926	42.7

More wood is used from other forests than from those owned by the State, but these amount to only about one-third of the total forest area. In all forests not under control of the Government the cutting was heavier than in those owned by the State. In the following table are given the cut per acre and the total cut in the different kinds of forest:

Annual cut in cubic feet per acre and total cut classified by ownership of forest

	Cut per acre	Total cut
State forest	5.15	1,506,975,000
Crown forest	10.75	201,267,000
Communal forest	11.15	98,869,000
Peasant forest	13.59	910,405,000
Private forest	37.04	4,554,990,000
		7,272,506,000

Thus the annual cut in European Russia is about 7,000,000,000 cubic feet for the productive forest land (332,846,000 acres), or 19 cubic feet per acre. On the other hand, the total annual growth for the same area is estimated at 12,711,000,000 cubic feet, or about 38 cubic feet per acre. In other words, the cutting in these forests is a little more than one-half of what is produced each year.

In the forests of Asiatic Russia the exploitation is practically nil, hardly amounting to .4 cubic feet per acre.

Assuming that one-half of the annual growth (12,711,000,000 cubic feet) is saw-log timber, there is produced annually 6,355,500,000 cubic feet of such material.

With a home consumption of about 25 cubic feet of saw logs per capita, the total would be 2,800,000,000 cubic feet, which would still leave 3,755,500,000 cubic feet available for export. Before the war the wood deficit in all European countries together amounted in logs to about 1,412,000,000 cubic feet per annum. Even though this deficit should become three times as large, still European Russia could apparently furnish enough timber for the countries which depend on importations for their supply.

Timber Regions

From the utilization standpoint the forests of Russia lend themselves to a division into timber regions tributary to sea ports or railroad centers. Thus, the White Sea, with its ports, forms a natural outlet for the timber of the northern Russian provinces; the ports on the Baltic Sea form an outlet for the forests located in the Baltic provinces. Similarly, the ports on the Black Sea, the Azov Sea, and the Caspian Sea provide a center toward which the adjoining forests naturally gravitate.

On this basis the forests of Russia are divided into 14 timber regions:

1. Northern Region (Archangel and Vologda).
2. North Baltic Region (Olonets, Novgorod, and Petrograd)
3. South Baltic Region (Esthonia, Livonia, Courland, Pskov, Smolensk, and Vitebsk).
4. Nieman Region (Kovno, Vilna, and Grodno)
5. Vistula Region - Russian Poland (Siwalki, Piotrkow, Lomsha, Warsaw, Plock, Kalisz, Kielce, Radom, Lublin, and Seidlce).
6. Region of the Rivers Dnieper and Dniester (Mogilev, Minsk, Volhynia, Kiev, Chernigov, Podolia, Bessarabia, Poltava, Ekaterinoslav, Kherson, and Taurida.
7. Ural Region (Perm, Ufa, and Orenburg).
8. Region of the Upper Volga (Tver, Yaroslav, Kostroma, and Vyatka).
9. Region of Central Volga (Wladimir, Nizhny, Novgorod, and Kazan).
10. Region of Lower Volga (Simbirsk, Samara, Saratov, Don, and Astrakhan).

Other Topics

[illegible] [illegible] [illegible] [

11. The Interior Region (Moscow, Kaluga, Ryazan, Penza, Tambov, Orel, Tula, Kursk, Voronezh, and Kharkov.)

12. The Caucasus Region.

13. The Turkestan Region.

14. Siberian Region.

The lumber industry may be best described separately for each timber region, and since the northern region is now the most important both from the standpoint of the United States and our Allies and its economic value to Russia, it will be taken up in considerable detail.

1. Northern Region - Governments of Archangel and Vologda.

Character of the timber.

European coniferous forest. Scotch pine and spruce predominate. In the eastern portion also larch, fir, and "cedar" (Pinus cembra); in places birch, aspen, and alder.

Area and ownership

The extent of the forest within this region and the character of ownership are shown in the following table:

Northern Region

Province	Forest Area					Per Cent of Total Land Area
	State	Private	Peasant	All Other	Total	
	Acres					
Archangel	86,365,800	8	210,600	671	86,647,300	44.6
Vologda	74,689,500	25,772	3,246,900	1,690	80,682,600	81.8
Total	161,055,300	25,780	3,457,500	2,361	167,329,900	57.2

The Lumber Industry

The lumber industry is most developed in the Government of Archangel. The annual production of the sawmills alone has been valued at from $13,000,000 to $15,000,000. Here are located the largest sawmills, employing from 500 to 1,000 men. In the Government of Vologda there are fewer sawmills, but the pulp industry has shown a perceptible growth. There are not less than 50 sawmills in the region working with a total of about 200 frames. Since the region is only sparsely settled there is practically no local market, consequently the sawmills are working chiefly for export trade. The principal outlet for export is the port of Archangel, the activity of which increases year by year.

Future of the Export Trade in the Region

There can be no doubt that the timber business will, in the North, be considerably augmented when the virgin forests of the Governments of Archangel and Vologda become better known and exploited. Everything points to the presumption that this extension will be particularly remarkable in the vast virgin forests which abound in the basin of the River Petschora. This immense zone, which embraces upwards of 5,500,000 acres of wood fit for sawing has remained intact until a few years ago, when an enterprising Swede, Mr. Lidbeck, acquired in the Petschora basin 1,300,000 trunks of various woods, with the exception of the Pinus cembra. The concession given to Mr. Lidbeck has a duration of 13 years. In addition to this, the firm of Olsen, Stampe and Company acquired by contract in 1899 a stock of 1,560,000 logs in the same watershed.

The Senior Executive

The Senior Executive is best considered in the context of the organization. The current population of the executive division is 1,200,000. Since the 1970's, the number of executives has grown by 1%, but the number of executive secretaries has grown by 3%. Executive secretaries are now 2,400,000 strong and the fastest growing segment of the executive population. Executive secretaries are the only group in the executive division that has grown in the last decade. Executive secretaries are the only group in the executive division that has grown in the last decade.

Effects of the Senior Crisis on the Nation

Since one in six adult Americans [illegible] will, by 1990, be executives, the stability of the executive division is of great importance. This concern stems from the fact that executives are the only group in the nation that has grown in the last decade. Executive secretaries are the only group in the executive division that has grown in the last decade.

The greater part of the export (more than 75 per cent) was sent to England, France, Belgium, and Holland; the transport is effected by steamers and sailing ships, which reach western Europe by the White Sea, the Arctic, and Atlantic Oceans, going around the Scandinavian Peninsula.

Dimensions Sawed

The dimensions of the wood sawn at the local sawmills vary; the thickness varies from ½" to 3", and the width from 7" to 11", with a minimum length of 3 feet (Omega). The planks, according to their dimensions, bear different names; the most common in the current sorting at Archangel are those of 3"thick by 7" wide, and from 10 ft. to 30 ft. long, known as battens, the shorter planks from 5 ft. to 12 ft. long also coming from Archangel, and of the same thickness as the preceding, but from 9" to 10" wide, bear the name of dilen; the planks 11" and upwards wide, and 3" thick and 10 ft. to 20 ft. long are called deals or sortovka; finally, under the name of boards, are included all these pieces of the same length 11"wide and 3/4" thick

Sizes of Logs Cut

It is but a short time ago that the sawmills only cut up trees measuring at the top at least 10", and having a length of 22 ft., but at the present time many sawmills do not disdain to saw up smaller trees, measuring 7" or 8" at the top. In spite of the various improvements in machinery which have been introduced in the mills, only about 50 per cent of the sawn wood is utilized, the remainder being considered as refuse, and sold locally for fuel.

Labor

The work is generally confided to native workmen, although in the northern part of the Government of Archangel, where the population is exceedingly sparse, it has been found necessary to bring in laborers from outside, for the most part inhabitants of the Governments of Olonetz and Vologda, and even of Finland.

Workmen's Cooperatives

One of the most ordinary ways of subletting the work in the northern region is the following: The workmen sign collectively in gangs a contract in the form of a letter, according to the terms of which they render themselves responsible as a body, not only for the execution of the work contracted for, but for all violations of the conditions stipulated by the State. Each wood-cutter receives a workman's book, in which are inscribed the conditions imposed. The recruiting of these men takes place at Archangel and at Vologda, either during the summer season or during the autumn in the month of September, after the auction sales. The organization of the workmen in crews is fairly customary in this region. Each crew chooses from amongst its members a leader, to whom is confided the making of all the arrangements between the crew and the contractor he receives as compensation an additional share of the profits.

The great scarcity of traction animals in the country obliges the contractors, almost everywhere, to provide themselves with horses from outside, which adds very considerably to the expenses of exploitation.

Manner of Paying Labor

The work is most frequently paid by the piece, and based on the number of logs gotten out; the number of these varies according to the conditions of the work and the nature of the country, from 70 to 300 logs per man for the winter campaign. The wages are paid in cash, but it frequently happens that the workmen take a part of their wages in food and other goods, furnished to them at the stores organized by the contractors. The wages are generally paid in three instalments - one-third as a deposit when the men are engaged, and the rest before and after the floating, in those cases where the same workmen undertake this additional operation. Wages paid by the month, week, or day are comparatively rare. As an indication of the average prices paid for getting out logs in the Governments of Archangel and Vologda, (including the driving out of the logs within a distance of about 7½ miles) may serve the following table:

Size of Logs

Length in feet	Greatest diameter in inches	Gov. of Archangel	Gov. of Vologda
19 to 22	nearly 12	½ .20	½ .22
	" 13	.26	.23
	" 14	.32	.27
	" 15	.34	.29
	" 16	.40	.34
	" 17	.42	.35
	" 18	.44	.39
	" 19	--	.40
	" 20	--	.45

Number of Visitor Nights

The data in most instances only is the first, and
based on the number of days the visitor at least
staying accordingly if the results not the duration
of the country, then it is not known how many visitor
nights. The above may only is important
because that the minimum time a part of their stays is long and
other hands, therefore to that of the visitor exclusive of the
accommodations. The number may generally only in these institutions -
non-first as a hospital also the not one eligible, and the real/
motion may after the itself, in those cases where the name
arrives movements type additional countries. These will be the
major, many, do city the accommodations very. In an institution
of the average driven only for-getting not made by the increment

Time of Year

Month in Year	Number in Institutions	Per. of Total	Per. of Inst.
	Number in		
	"		
	"		
	"		
	"		
12 to 12	"		
	"		
	"		
	"		
	"		
	"		
	"		
	"		

Lumber Camp

The life of the wood-cutters in the northern regions is not unlike that in our lumber camps of the northeast. In the absence of any habitable center, they generally live in temporary camps hastily constructed. They have to lay in provisions for a more or less long period. In certain regions, the Kola district, for example, the nearest village is from 118 to 150 miles away. The horses are sheltered in small covered enclosures, the forage is collected in advance during the summer in the neighboring fields, or is brought up during the winter in sleighs.

The few roads which exist are mostly in a bad state, and can only be used during a portion of the year. A considerable part of the Government of Archangel-Laponia and the region of Petschora, for example, possess no other means of transport than the rivers.

Log Driving and Rafting

The most important rivers for floating in the region are: The Northern Dwina (with the Soukhona, the Vaga, the Vytchegda, and Pinega), the Onega, and Vyg, the Mezen, the Kem, the Koret, the Kovda, the Toulooma, and the Petschora (with the Imja, the Tsilma and the Kolva).

Floating the northern zone commences generally at the end of April, but in certain regions, the Kola peninsula, for instance, where the break-up of the ice takes place later, the campaign does not open till the middle of May and sometimes the beginning of June. The time during which it lasts varies con-

siderably, and depends on the distance which the logs have to travel, as well as on the floating conditions of the rivers. On the Northern Dwina, over a distance of nearly 1,000 miles, the season lasts from one to two and a half months. In the Kola district floating by the Rivers Kola, Lota, and the lakes Notozer and Touloma (over a distance of 75 to 150 miles only) is spread over from two and a half to three months in consequence of the numerous falls which are met with in the rivers of Laponia, and is not completed till the beginning of August or the middle of September. The climatic conditions at the beginning of the bad weather are very unfavorable to floating in the districts of Soroka and Kem in the Government of Archangel. It sometimes becomes necessary to haul out the logs and to leave them on the banks until the following spring.

On the small rivers the floating is carried out either by single logs or by small rafts, containing from 50 to 150 logs each; 10 or 20 of these rafts are coupled up together to make the trains. At the points where the various tributaries join the main river the logs are collected into trains of considerable sizes. For the floating by single logs on the small rivers a bar is erected at the junction of the rivers to prevent the water remounting at the time of the following freshet. There the logs are gathered together in trains from 200 to 1,500, and even up to 3,000 pieces each, which are dispatched towards the sawmills. On the big rivers the trains of logs are generally towed by tugs. The logs are occasionally towed in the form of

yards (or "kochels"), consisting of a number of logs attached to each other, which form a sort of frame for the floated wood. This method of gathering the logs together is often adopted for crossing the lakes of the White Sea. On the sea the logs, of which this kind of raft is built, are bound together by an iron chain passed through holes bored in the ends of the trunks. Tug boats are generally in use on the Northern Dwina, but they have also been employed for some time past on the Petschora, and even on the Toulema, and in the Kola Gulf. The trains of smaller logs are hauled by hand by means of a capstan placed on a separate raft anchored in front, and which is advanced as the floating proceeds. As regards the loss of logs suffered in the operation of floating, it does not as a rule exceed one per cent; it may, however, in certain cases become more serious, for example, on the White Sea floatings, and particularly on the Kolotitsa, on the Kouia, and on the Kada. This is due to the fact that the northern shore of the White Sea contains neither islands nor bays to serve as a shelter against storms. The trains towed include ordinarily 500 to 2,000 logs, and sometimes 5,000 in the Kovda district.

The price paid for the work of floating varies considerably. In the districts where monthly pay is the custom the workmen earns from $2 to $15, but in the Government of Archangel the average is $8.50 per month, with food furnished by the contractor. The average monthly wages earned for floating to Archangel the logs coming from the Vologda Government

are $8 and vary from $5 to $12; for the floating by the Volga the average reaches $8.15. The work is also often paid for by the piece, at so much per log floated.

The average cost for the transport of a log into the sawmill yard in the Archangel Government may be estimated at 13 cents and the expenses vary between $.03 and 30 cents per log, according to the length of the journey, which is sometimes as much as 560 miles. The floating by the White Sea of the logs got out from the neighboring forests is very costly; it amounts to 18 cents per log from the Government of Vologda to the town or Archangel, for a distance varying between 300 and 1,000 miles.

The best logsmen are those on the Onega, who excel in getting down single logs on the small water courses. This very dangerous occupation demands, particularly in the north, exceptional skill.

2. North Baltic Region (Olonets, Novgorod, and Petrograd)

Character of Forest

Scotch pine and spruce predominate. In the governments of Petrograd and Olonets pine and spruce are about in equal amounts; birch and aspen in mixture. Olonets has less birch and aspen but more pine than Petrograd.

Area and Ownership

The extent of the forest within this region and the character of ownership are shown in the following table:

Province	Forest Area					Per Cent of total land area
	State	Private	Peasant	All Other	Total	
	Acres					
Olonets	12,062,400	1,062,200	2,187,300	145,400	15,477,300	47.6
Novgorod	4,041,800	8,258,500	1,723,700	645,000	14,869,000	53.9
Petrograd	956,500	4,003,700	130,100	41,200	5,131,500	50.2
	17,080,700	13,324,400	4,041,100	831,600	35,277,800	50.4

The Lumber Industry

The lumber industry is very important in the region. At some places almost the entire population is engaged in it. The industry is centered principally in Petrograd and Novgorod. The sawmills of this region are smaller than those in the Northern Region. They work both to meet the needs of the city of Petrograd and the increasing demand for manufactured lumber from abroad. Besides sawmills and veneer plants, the principal wood-using

industries are box making, manufacture of excelsior, ties, mine props, and cordwood. There are not less than 22,000 woodworkers engaged in the home industry. Woodenware, furniture, agricultural implements, and wagons are the chief articles produced. With the construction of the railroad from Petrograd to Vologda, the lumber industry has received a new impetus. There are some importations to Petrograd from the Vistula region and Finland. What hampers the development of the lumber industry in this region is the poor condition of the drivable streams and roads, and lack of credit to the small operator.

3. South Baltic Region (Esthonia, Livonia, Courland, Pskov, Smolensk, and Vitebsk)

Character of Forest

Scotch pine and spruce predominate. In Esthonia, Livonia, and Pskov there is as much pine as there is spruce. In Smolensk spruce predominates, in Vitebsk, pine.

Area and Ownership

The extent of the forest within this region and the character of ownership are shown in the following table:

Province	Forest Area					Per cent of total land area
	State	Private	Peasant	All Other	Total	
	Acres					
Esthonia	5,300	832,700	...	18,500	856,500	19.2
Livonia	325,800	1,810,100	1,700	79,300	2,216,900	21.2
Courland	752,800	1,172,300	100	5,900	1,931,100	29.5
Vitebsk	473,600	2,178,300	21,900	7,200	2,681,000	25.9
Smolensk	231,500	2,506,800	401,900	54,500	3,194,700	24.5
Pskov	182,600	2,586,600	67,000	61,500	2,287,700	29.0
Total	1,971,600	11,086,800	492,600	226,900	13,777,900	25.1

The Lumber Industry

This region is chiefly important not so much because of production of lumber as on account of the trade in lumber. Most of the lumber shipped from various points in Russia used to go through Riga, which was the largest lumber port not only in Europe but probably in the entire world. The industry is centered near Riga and its suburbs, where thousands of men were engaged in the delivery, reshaping, and shipping it abroad. Furniture making and the manufacture of cork are also developed, especially the latter. Within the last 12 years the sawmills have nearly doubled.

Livonia is an important center of the lumber industry. Esthonia and Courland have not developed any important wood-using industry. Smolensk has 71 sawmills employing over 2000 men; other wood-using industries of the factory type are only poorly developed. On the other hand the home industry in timber is well advanced

Location	Date	Price	Income	Area	Ave. Yield	Ave. Income
		£	£	£		
Chichester	3,800	£22,500	...	12,850	800,000	12.4
Tarvin	£28,500	£ 2,812,720	£ 1,400	42,000	£ 2,128,000	17.2
Cheltenham	£80,000	£ 1,142,800	120	8,000	£ 1,321,120	12.2
Lipsyke	£26,500	£ 2,128,300	£1,400	2,800	£ 2,221,000	21.3
Dunbarnock	£21,200	£ 2,808,800	£07,400	24,800	£ 2,184,400	24.8
Lyscon	128,000	£ 2,224,000	£4,000	£1,800	£ 2,324,400	12.0
Total	£ 2,412,500	£ 12,248,820	122,400	£28,400	£ 12,442,000	14.1

The Income Estimate

There exists no strictly scientific way of using measures of income to estimate the value of land. In theory, since a purchaser is buying an income stream, the investment is worth what the present worth of the future stream of income is. In practice, however, the investor is buying land and will be paying for the income, whether the farmland itself is worth the price, and whether the farmland stream will be there for the future. Although there are many ways of estimating the present worth of a stream of income

wagons and cooperage are the most important. In this region the private forests predominate; they have been greatly devastated; the timber is expensive; the means of communication very poor. During droughts the navigation and floating of rafts on the Western Dvina and its tributaries as well as on the rivers of the Dneiper basin become difficult on account of sand bars.

4. Niemen Region (Kovno, Vilna, and Grodno)

Character of Forest

Conifers predominate. In Grodno and Vilna there is more pine than spruce. In Kovno spruce exceeds pine. The conifers have an admixture of aspen, birch, and also oak.

Area and Ownership

The extent of the forest within this region and the character of ownership are shown in the following table:

Province	Forest Area					Per cent of total land area
	State	Private	Peasant	All Other	Total	
	Acres					
Kovno	447,800	1,181,800	....	4,700	1,634,300	16.8
Vilna	718,100	1,415,100	48,800	2,100	2,184,100	22.9
Grodno	1,069,800	990,900	18,000	19,200	2,097,900	23.6
Total	2,235,700	3,587,800	66,800	26,000	5,916,300	21.0

Forests

The extent of the forest within this region and the character of ownership are shown in the following table:

Forestland Type	Timberland	Reserved Land	Total
	Acres		
Farms	647,800	1,161,800	1,809,600
Cities	176,100	4,414,400	4,590,500
Towns	1,384,400	14,000	1,398,400
Total	2,208,300	5,590,200	7,798,500

Land and Industry

Conditions prevailing. In towns and cities there is more pine than spruce. In farms spruce exceeds pine. The results here on relative of edges, sizes, and size and.

Area and Ownership

The extent of the forest within this region and the character of ownership are shown in the following table:

Forestland Type	Timberland	Reserved Land	Total
	Acres		
Farms	647,800	1,161,800	1,809,600
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Towns	1,384,400	14,000	1,398,400
Total	2,208,300	5,590,200	7,798,500

3. Slopes Facing Plains, and Uphold

of many kind.

the rivers of the Juniper basin become difficult on account very poor. During drought the navigation and flooding of reefs on the western river and its tributaries as well as on vented; the timber is important; the means of communication the private forests predominate; they have been greatly in-

markets and conditions are the most important. In this region

The Lumber Industry

The industry is important in many places. A great deal of raw and some manufactured material is shipped abroad; the poorer grades remain at home for local needs. Especially developed is log driving and floating of pulpwood on the rivers Nieman and Vilva to the wood-using establishments and pulp mills in Germany. A great many ties are made in the region. The local sawmills work only for local markets. On the whole the sawmill industry is not well developed, nor are large wood-using establishments. There are more men engaged in the home industry than in factories. The great drawback is that on the rivers Vistula and Vilna within the Russian border there are no lumber yards. Russian lumbermen must therefore ship their products direct into German territory, where there are splendid wood yards and other conveniences, but this places the Russian lumbermen entirely at the mercy of the German trader in lumber.

5. Vistula Region (Suwalki, Piotrkow, Lomsha, Warsaw, Plock, Russian Poland Kalisz, Kielce, Radom, Lublin, and Seidlce)

Character of the Forest

Because of the poverty of the soil, pine predominates in almost all these governments. Larch, spruce, and fir (in the southern portion of the region) occur only in the governments at Piotrkow, Kalisz, and Suwalki. Oak occupies 7 per cent of the productive forest land. Among other broadleaf species are beech, ash, maple, and sycamore.

The Theory Underlying

The following is intended to only elucidate . I deeply feel of how not even contemporary materials is relying entirely are [illegible] Quite, but Dunwell. One particular [illegible] certainly is the related and [illegible] at [illegible] on the others [illegible] may [illegible] to the [illegible] [illegible] not [illegible] is [illegible]. I [illegible] much time and much to the [illegible]. The first [illegible] very [illegible]. It is [illegible] [illegible] [illegible]

Area and Ownership

The extent of the forest within this region and the character of ownership are shown in the following table:

Province	Forest Area					Per cent of total land area
	State	Private	Peasant	All Other	Total	
	Acres					
Suwalki	493,700	114,700	28,400	11,300	648,100	21.6
Lomsha	279,700	254,200	26,000	100	560,000	23.0
Warsaw	158,000	318,300	33,500	100	509,900	12.3
Plock	54,800	163,400	19,900	2,600	240,700	10.5
Kalisz	79,400	247,700	39,200	111,800	478,100	17.4
Piotrkow	174,600	294,100	57,100	3,800	529,600	17.7
Radom	307,900	428,600	74,500	11,400	822,400	27.5
Kielce	216,500	244,600	38,900	9,500	509,500	21.2
Lublin	97,000	588,600	129,800	14,800	800,200	19.9
Feidlce	89,200	406,100	124,500	160,000	779,800	22.3
Total	1,950,800	3,030,300	571,800	325,400	5,878,300	19.3

The Lumber Industry

The lumber industry and wood-using plants are well developed; the product is mostly consumed locally. There are large furniture factories employing from 500 to 1,000 workmen; the specialty is high-grade bent furniture and parquet. Here also is one of the largest factories of wooden nails and wooden lasts. In Poland alone there are 7,000 peasants engaged in the villages in the manufacture of woven and splint baskets and other containers. The region is in need of an early construction of the projected

canal which would connect the river Niemen with the ports on the Baltic Sea, thus enabling the shipment of lumber direct to England instead of sending it through the Prussian middleman. The industry suffers because of the fact that the best timber is sent to Germany; on the other hand there is a lack of hardwoods, especially of beech, which is demanded in large quantities at the factories of bent furniture.

6. Region of the Rivers Dneiper and Dniester (Mogilev, Minsk, Volhynia, Kiev, Chernigov, Podolia, Bessarabia, Poltava, Ekaterinoslav, Kherson, and Taurida)

Character of Forest

In the northern part spruce predominates, forming 80 per cent of all the forest; not much pine. There are still large quantities of oak, the export of which is growing.

Area and Ownership

The extent of the forest within this region and the character of ownership are shown in the following table:

Province	Forest Area: State	Private	Peasant	All Other	Total	Per cent of total land area
	Acres					
Mogilev	292,400	2,317,700	570,000	21,100	3,201,200	28.3
Minsk	1,280,000	7,110,800	67,500	15,400	8,473,700	40.7
Kiev	516,000	1,419,000	6,800	52,500	1,994,300	16.3
Chermigov	272,500	1,249,800	271,600	32,700	1,826,600	15.5
Podolsa	253,200	775,900	....	13,700	1,042,800	10.4
Volhymia	1,103,100	3,573,400	3,900	23,700	4,704,100	28.3
Poltava	35,100	434,500	92,900	13,300	575,800	5.0
Ekaterinoslav	36,400	369,100	172,400	10,300	588,200	3.8
Kherson	111,100	148,500	23,200	9,200	292,000	1.6
Bessarabia	26,400	127,900	68,400	429,800	652,500	6.2
Taurida	173,400	343,000	266,800	342,500	1,125,700	7.7
Total	4,099,600	17,869,600	1,543,500	964,200	24,476,900	16.1

The Lumber Industry

This at present is one of the most important centers of the lumber industry and the timber trade. The material is used for both home consumption and more distant markets. Some round timber is sent abroad, but the bulk is sawed up into boards, box material, excelsior, and matchwood; especially developed is the manufacture of veneer. There is also a great deal of wood distillation, the largest wood distillation plant being located in this region. There are not less than 30,000 peasants engaged at home in the manufacture of wooden products--tubs, woven and splint baskets, agricul-

Province	Stock	Potatoes	Imported	Other	Flour	Other
Bengkiew	816,400	2,312,800	140,000	67,100	1,814,000	81
Kiang	2,840,100	7,212,000	41,800	18,000	4,473,400	41
Kiu-	618,000	1,413,100	6,000	84,600	1,404,000	77
Chentsiye	218,800	1,311,800	121,000	24,700	1,088,800	72
Tsetsiu	316,300	112,600	.....	12,400	1,041,800	80
Yuliangtu	1,102,100	2,816,400	3,800	82,400	2,706,100	82
Yuliuen	10,100	838,000	41,100	13,800	112,000	8
Kuantsiumiaokiao	420	324,100	118,000	13,300	211,800	1
Lungtsun	211,100	144,000	42,800	1,000	812,000	1
Jaohsuenfu	28,400	127,800	22,600	118,000	102,800	8
Tsaotin	121,100	241,300	180,000	112,100	1,110,100	7
Total	4,041,000	12,844,800	1,811,800	604,300	14,418,400	72

The Chinese Industries

There is reason to fear at the most optimistic estimate of the Canton industry and the Jiujiang figure. The majority of these industries are run by Chinese capitalists, who have always been very much opposed to any foreign control, and even direct assistance. There is also a strong anti-foreign feeling among the workers. Industrial disputes--such as the Hanyang strike--are frequently caused by anti-foreign sentiment, and unemployment; undoubtedly contributes to the unfriendliness of the people, but the best is known as the "Hanyang" type of strike. The majority of these industries are run by Chinese capitalists, who have always been very much opposed to any foreign control, and even direct assistance. There is also a strong anti-foreign feeling among the workers. Industrial disputes--such as the Hanyang strike--are frequently caused by anti-foreign sentiment, and unemployment; undoubtedly contributes to the unfriendliness of the people, but the best is known as the "Hanyang" type of strike.

tural implements, and wagons. There are about 11,000 cabinet-makers alone among the workers engaged in this home industry.

7. Ural Region (Perm, Ufa and Orenburg)

Character of The Forest

Principally pine and spruce forests. In places also fir in mixture with spruce and cedar (Pinus cembra). Oak is abundant in Ufa and Orenburg.

Area and Ownership

The extent of the forest within this region and the character of ownership are shown in the following table:

Ural Region

Province	Forest Area					Percent of total land area
	State	Private	Peasant	All Other	Total	
	Acres					
Perm	26,266,800	13,258,600	3,605,600	2,971,100	46,102,100	57.3
Ufa	2,532,600	3,691,800	980,300	43,100	7,254,800	25.0
Orenburg	637,100	1,937,800	4,255,100	8,700	6,838,700	15.1
Total	29,436,500	18,888,200	8,848,000	3,022,900	60,195,600	38.9

The Lumber Industry

Although the lumber industry is not the largest industry in the region, it is of considerable importance, because of the metallurgical industry which depends on the timber resources of the region. There is a number of sawmills the output of which are boards, staves, boxes, excelsior and parquet are the other products of the region. The manufacture of

trunks and the wood pulp industry are also developed to a considerable extent. The wood distillation industry is very extensive-- charcoal, wood alcohol and tar, being the main products. The peasant workers, of whom there is a large number, are engaged in wagon making and cabinet work. The products of this region are partly consumed locally and partly sent by water to cities along the Rivers Volga and Kama. Some of the product is even sent to the Siberian markets. Recently some material has been sent to Archangel and Petrograd for export abroad. The forests most exploited are those belonging to private owners and to the Mining Department. The Government forests proper could be developed to a large extent if there were good roads.

8. Region of the Upper Volga (Tver, Yaroslav, Kostrom, and Vyatka)

Character of forests

Pine and spruce forests in abundance. Mixed with them are birch, aspen, alder; also oak in the southern part.

Area and Ownership

The extent of the forest within this region and the character of ownership are shown in the following table:

Forest Area

Province	State	Private	Peasant	All other	Total	Per cent of total land area
		Acres				
Tver	1,013,300	2,348,000	202,000	884	3,636,700	24.1
Yaroslav	539,100	1,819,100	119,000	658	2,543,000	30.7
Kostroma	4,726,700	4,181,000	480,600	914	9,419,700	46.6
Vyatka	10,455,300	1,961,600	3,184,200	202	15,601,300	41.1
Total	16,709,400	10,309,700	3,985,800	3,656	31,180,700	38.2

The Lumber Industry

The lumber industry is not developed uniformly throughout the region. In some places it is the main occupation of the entire population. Sawmills are being developed rapidly; machine labor is crowding out manual labor, and within the last few years there has been a considerable increase in the number of factories, both large and small. In the Government of Kostroma there are several wood-using plants employing over 100 men. Most of all are developed the wood-using industries of the peasant workers. The chief product is wooden ware, cups, spoons, footwear made of bast, and bast ropes. The reason for the variety of the industries is due to the variety of the available timber. Much of the timber is also used for shipbuilding and furniture. The wood-using industries are capable of great development if there were good roads, more railroads, and if the drivable and navigable rivers were in a better condition.

FASHION TALES

Fashions	Styles	Clothes	Dresses	Wardrobe	Hat	Shoes	Suit	Coat	Jewelry
Coat	1,020,340	2,304,041	870,566	194	3,041,349	1,020,340	2,304,041	870,566	194
Jewelry	436,120	1,414,120	134,441	466	1,421,041	436,120	1,414,120	134,441	466
Fashion	2,496,401	4,141,001	436,220	634	1,811,401	2,496,401	4,141,001	436,220	634
Style	17,184,301	1,811,401	2,134,341	414	17,807,314	17,184,301	1,811,401	2,134,341	414
Shoes	12,304,410	10,801,340	6,408,201	1,120	47,142,401	12,304,410	10,801,340	6,408,201	1,120

The Shoes Industry

The Shoes industry is not terribly exciting. Unless you like soles. It was first invented in its own country, and it is (rightly so) the world's footwear. Countries are being developed [illegible] there is crowding and rapid [illegible] in the [illegible] of Shoestan still has relatively flat [illegible] with [illegible] and [illegible] in the [illegible] [illegible] [illegible]

9. Region of Central Volga (Vladimir, Nizhny-Novgorod, and Kazan).

Character of the Forests

Oak predominates, particularly in Nizhny-Novgorod and Kazan.

Area and Ownership

The extent of the forest within this region and the character of ownership are shown in the following table:

Central Volga Region

Province	Forest Area: State	Private	Peasant	All Other	Total	Per cent of total land area
	Acres					
Vladimir	658,900	1,853,100	332,500	98,500	3,162,400	27.8
Nizhny-Novgorod	1,867,700	2,283,900	483,000	62,400	4,697,000	36.2
Kazan	3,615,900	659,300	355,400	36,200	4,646,700	30.2
Total	6,341,800	4,796,300	1,195,900	199,100	12,506,100	33.0

The Lumber Industry

Although the timber resources are much smaller in this region than farther north, the industries dependent upon wood are very essential as subsidiary occupation to the population.

In several places the wood-using industry is the main source of revenue. The cutting of cordwood and poles and driving them to points of consumption within Russia engage a large portion of the population. The burning of wood in pits to obtain the products of distillation is very common.

10. Region of Lower Volga (Simbirsk, Samara, Saratov, Ufa, and Astrakhan)

Character of the forests

Broadleaf forests predominate. In the northern portion of the region there is some pine and spruce. Oak is the most important species. It predominates in Simbirsk and makes up 14 per cent of the forests in Samara and Saratov. Among other broadleaf species are elm, maple, ash, and birch. In Astrakhan there are no forests, but shrubs.

Area and ownership

The extent of the forest within this region and the character of ownership are shown in the following table:

Lower Volga Region

Forest area

Province	State	Private	Peasant	All other	Total	Per cent of total land area
			Acres			
Simbirsk	2,175,400	1,021,300	37,100	80,800	3,342,600	28.7
Samara	1,469,900	724,600	334,100	44,000	2,572,600	7.6
Saratov	506,200	1,042,000	772,700	76,500	2,404,200	12.7
Astrakhan	331,000	38,300	139,900	4,400	510,500	0.4
Ufa	2,900	250,800	520,200	69,000	842,800	2.1
Total	4,485,300	3,124,000	2,079,000	274,800	9,921,000	5.1

The Lumber Industry

This region is chiefly a consumer of wood. There is not much timber and what there is of it are harvests. The sawmills and the wood-using industries are fed mostly by the timber that is floated along the River Volga from the Northern Region. The trade in lumber is very large, reaching from 13 to 15 million dollars a year. Much of the product is exported to the ports of the Azov Sea and from there sent to northern Caucasus and Siberia. Here, as in every other region, the industry is capable of tremendous expansion if the means of transportation could be improved.

11. The Interior Region (Moscow, Kaluga, Ryazan, Tula, Tambov, Orel, Kursk, Voronezh, and Kharkov

Character of the Forests

Pine predominates only in Ryazan and Orel. In Moscow and Kaluga half of the forests are pine and the other half broadleaf, while in the Governments of Tambov, Penza, Tula, Voronezh, Kursk, and Kharkov, the broadleaf forests predominate. The oak is the principal species. It occupies 60 per cent in Kursk, 53 per cent in Voronezh, 45 per cent in Tula, 36 per cent in Penza, 15 per cent in Kaluga, 15 per cent in Orel, 11 per cent in Tambov, and only 5 per cent in Ryazan.

Area and Ownership

The extent of the forest within this region and the character of ownership are shown in the following table:

The Indoor Interior

It is hardly a necessary BE work. There is not much indoor and what there is of it are luxurious. The wonderful and the wood-working industries are just worthy of the indoor that is formed along the river below from the Dearborn region. The trade is reason de very large, running from 12 million dollars a year. Some of the product is marketed in the city and from there into parts in Michigan and Illinois, some, of course, is exported to other countries. The mix in the principal imports. It receive in Detroit, it has first to Toledo, and only a few need to go there.

Some Characteristics

The weight of the Detroit visitor BEE brought out the remarkable, or unusual, was shown in the accompanying

Interior Region

Province	Forest Area: State	Private	Peasant	All Other	Total	Per cent of total land area
	Acres					
Moscow	397,000	1,356,500	365,500	101,800	2,210,200	27.7
Kaluga	221,200	1,386,300	320,300	71,400	2,100,100	25.0
Ryazan	232,700	1,178,700	305,600	17,400	2,023,600	20.1
Penza	529,000	747,900	236,300	25,400	1,874,600	18.1
Tambov	1,132,100	955,500	305,700	190,400	2,595,700	16.2
Orel	730,800	1,195,800	107,400	59,000	2,092,800	18.7
Tula	103,200	445,300	55,300	9,600	614,600	8.3
Kursk	126,600	382,900	190,200	18,000	617,700	5.5
Voronezh	298,300	304,400	228,400	18.1	1,179,200	7.4
Kharkov	176,200	559,800	381,900	6,200	1,124,100	8.6
Total	4,140,000	8,606,800	2,974,700	520,900	16,962,400	14.8

The Lumber Industry

The region is not very rich in timber. Most of the timber product is used locally. A great deal of lumber is imported from other regions, principally from the Volga Region. The greatest consumer of forest products, especially of cordwood, is Moscow. The home wood-using industry is the most characteristic industry of the region; nearly 104,000 peasant workers are employed in it. The chief products are wagons, cooperage, and furniture.

12. The Caucasus Region

Character of the Forest

Hardwood forests predominate. The species in the order of their importance are: beech, 25 per cent of the forest area; oak, 18 per cent; blue beech, 15 per cent; pine, 8 per cent; spruce, 7 per cent; and fir, 6 per cent.

Area and Ownership

The extent of the forest within this region and the character of ownership are shown in the following table:

Caucasus Region

Total Forest Area

Province	State	Private	Total	Per cent of total land area
Stavropol	25,126	28,874	54,000	0.3
Terek	980,175	56,627	1,036,800	6
Kuban	1,682,594	2,942,576	4,625,100	19
Chernomorskaya	1,203,927	...	1,203,927	92
Kutais	3,776,687	294,913	4,071,600	45
Tiflis	1,690,629	1,668,171	3,358,800	35
Elizabethpol	2,054,198	254,302	2,308,500	21
Kars	570,308	...	570,502	8
Daghestan	128,296	622,304	750,600	10
Baku	1,080,662	80,339	1,161,001	12
Erivan	415,089	...	415,089	6
Total	13,405,813	5,948,106	19,353,919	
Productive forest area	9,000,000	4,193,000	13,193,000	

Total Capital Items

Institution	Items	Difference	Items	Total Items of Capital
Transmitted	14,720	10,810	10,720	14
Bonds	104,720	10,810	7,104,720	6
Items	7,104,104	6,104,104	4,720,720	12
Investments	7,020,840	---	7,020,840	18
Items	6,140,840	140,840	6,140,840	14
Capital	6,720,720	7,104,720	6,720,720	16
Liabilities	6,104,104	104,840	6,104,104	17
Items	840,720	---	840,720	4
Investments	720,720	840,720	840,720	14
Items	7,720,840	10,840	7,720,840	12
Total	720,840	---	720,840	8
Total	22,840,840	8,840,720	14,720,840	
Capital Items Investments	6,720,720	6,720,720	14,720,840	

13. Turkestan Region

Character of the Forest

Broadleaf species predominate--birch, aspen, alder, black and white poplar, elm, oak, and maple. Spruce and pine are found only in isolated places in the mountains. At the foot of the mountains of Turkestan walnut is quite common.

Area and Ownership

The extent of the forest within this region is shown in the following table:

TURKESTAN

Turkestan	Total Area of State Forests Acres	Productive Forest Area Acres
Semirechensk	3,445,727	3,445,727
Sir-Daria	23,050,664	17,996,341
Samarkand	10,567,454	7,672,001
Ferghana	2,495,779	1,609,280
Total for Turkestan	39,657,464	30,723,959

14. Siberian Region

a. Western Siberia

Dense coniferous forests with extensive swamps. Siberian larch (Larix sibirica), white pine (Pinus cembra), and Scotch pine predominate. Among broadleaf species are aspen, basswood, poplar, alder, and birch; farther east as the more mountainous region is approached, extensive coniferous forests in solid bodies with white pine (Pinus cembra), spruce, Scotch pine, and larch (Larix dahurica).

b. Eastern Siberia

In addition to spruce, Scotch pine, and Dahurian larch, large quantities of birch (Betula dahurica) and poplar (Populus balsamifera) are found.

c. Amur Region

Broadleaf species predominate. Mongolian oak (Quercus mongolica), several species of maple, basswood (Tilia mandshurica), elm (Ulmus montana), corkwood (Phellodendron amurensis), Mongolian black walnut. The extent of the forest within this region and the character of ownership are shown in the following table:

Western Siberian Region	Total Area of State Forests Acres	Productive Forest Area of State Forests Acres
Uralsk	73,[illegible]	48,878
Turgai	1,434,677	988,678
Tobolsk	170,808,918	48,563,158
Tomsk	92,857,878	23,047,425
Yeniseisk	55,031,573	20,344,084
Irkutsk	54,795,051	17,191,378
Total Western Siberia	311,928,038	106,227,180
Eastern Siberian Region		
Trans-Baikal	79,803,000	7,038,300
Amur	94,070,700	31,350,730
Primor	83,025,800	50,315,385
Saghalien	10,530,000	6,750,000
Total Eastern Siberia	277,[illegible]	165,[illegible]
Siberian Prairie Region		
Semipalatinsk	9,[illegible]	5,818,678
Akmolinsk	9,[illegible]	1,110,344
Total Siberian Prairie	18,385,848	6,928,080
Asiatic Russia Total	604,[illegible]	278,[illegible]

The Lumber Industry of Caucasus, Turkestan, and Siberia

The lumber industry of the Caucasus, Turkestan, and Siberian regions has already been discussed in connection with the export timber trade of Russia.

Forest Regions

The forests of Russia may be divided into six broad regions:

1. The northern coniferous forest (Taiga)
2. The mixed coniferous and hardwood forest.
3. The hardwood forest of the prairie region.
4. The vertical forest belts of Caucasus.
5. The vertical forest belts of Turkestan.
6. The hardwood forests of the Amur region.

1. The Northern Coniferous Forest (Taiga)

The northern coniferous forest stretches from the Pacific Coast to the Baltic Sea and in Siberia it extends south to China. It abounds in swamps, particularly in the western part of Siberia and the extreme northern part of European Russia.

European Coniferous Forests

In the central portion of northern Russia coniferous forests of pine (Pinus sylvestris) and spruce (Picea excelsa) form the predominant type. In the eastern part of the

The Senior Secretary of Development, Department, and Industry

The Senior Secretary of the Department, Development, and Industry additionally registers his primary health insurance in addition with his regular Senior Service of Treasury.

Medical Coverage

The Parents at Council may be trained under the Civil Regulations:

1. The Secretary Commissioner Should Finish;
2. The Salary Additional Service Council;
3. The Retired Council Duties of Commander;
4. The Retired Council Duties of Commander;
5. The Retired Council Duties of Commander.

1. The Chairman Commissioner Service Clerks

The secretary additional Senior Executive Some the Service Council in his Duties Who and He Already it Working Member Or Other. It Amount In Commander, Particularly In The Medical Used At Should For His Extreme Additional Part Of Maximum Outside.

Personnel Commissioner Director

In the medical Service of Personnel Should Additional Former it Some Clerks Retirement and Service Some the Investigated Also. In The Workmen Lord Of The Commander.

Government of Archangel and in the Ural Mountains European larch (Larix decidua europea), which differs very little from the western European larch, forms vast forests. Further east there appears fir and near Ural also "cedar" (Pinus cembra).

Siberian Coniferous Forests

Lake Baikal divides Siberia into two almost equal parts - western and eastern. Western Siberia includes the Governments of Tobolsk, Tomsk, Yeniseisk, Irkutsk, also the Provinces of Turgai and Uralsk. Eastern Siberia includes the Provinces of Trans-Baikal, Pre-Amur, Amur, and Saghalien. The prairie region of Siberia includes the Provinces of Semipalatinsk and Akmolinsk. The vast stretch of land adjoining the Arctic Ocean from the Ural Mountains to the Bering Strait is Arctic Tundra, devoid of forests, although here and there are found some dwarfed trees. Next to Tundra is a forest belt which also extends across entire Siberia to the Pacific Ocean. This forest is not always a continuous forest, as is commonly believed, but is interrupted by vast swamps and burns. The forests are mostly found on divides, particularly on the south slopes, affording them protection from the north winds. The most important species which make up the forest in western Siberia are spruce, pine, Siberian fir, "cedar" (Pinus cembra), and larch among the conifers, and birch with aspen among the hardwoods. Along the rivers

there are found mixed coniferous and hardwood forests in which, however, spruce and 'cedar' predominate.

In eastern Siberia, particularly in the Amur and Pre-Amur provinces, another species of spruce (Picea ajanensis) is very common. Among other conifers is the Manchurian pine (Pinus mandshurica), a very valuable tree, Pinus funebris, a pine which is particularly common in the basin of the River Usuri, and larch (Larix daburica). Of the firs are found Abies nephrolepis, common in the Amur and Pre-Amur regions, and Abies holophylla, common in the southern Usurian region.

3. The Mixed Coniferous and Hardwood Forest

The mixed coniferous and hardwood forest is made up of Scotch pine, spruce (Picea excelsa), larch, European fir (Abies pectinata), oak (Quercus pedunculata), basswood (Tilia parvifolia), maple (Acer platanoides), ash (Fraxinus excelsior, hornbeam (Carpinus betulus) and beech (Fagus sylvatica).

4. The Hardwood Forest of the Prairie Region

The hardwoods of the prairie region in European Russia are made up of oak (Quercus pedunculata), maples Acer platanoides, Acer campestre and Acer tataricum, ash Fraxinus excelsa), basswood (Tilia parvifolia), elm (Ulmus effusa, montana, campestris, and suberosa), and poplar.

Of the conifers are found only Scotch pine, which occasionally forms stands on sandy soils near rivers. The forests most characteristic of the prairie region west of the Ural Mountains are made up of oak, east of the Ural Mountains the birch is the most characteristic species with an occasional admixture of willow and aspen. Neither oak, maple, ash, elm, or basswood are found in the prairie region east of the Ural Mountains until the Amur region is reached.

4. The Vertical Forest Belts of Caucasus

The mountains of Caucasus present several vertical belts. Near the shore are found large swamps occasionally covered with a dense growth of alder. On the edge of the swamps where the soil is drier are found oak, beech, hornbeam, basswood, ash and maples, covered with smilax and other vines. Higher up the mountains there begins a mixed forest of summer oak (Quercus sessiflora) blue beech (Carpinus betulus and duinensis), and beech (Fagus sylvatica orientalis), occasionally in mixture with these are found also elm, ironwood (Ostrya), chestnut, maple, basswood, ash, and aspen. Higher up the mountains are found coniferous forests comprising Scotch pine, eastern spruce (Picea orientalis) and Crimean fir (Abies Nordmanniana). Occasionally are found forests of other conifers such as Crimean pine (Pinus laricio), maritime pine (Pinus maritima) and mountain pine (Pinus montana). The undergrowth characteristic of this belt is made up of rhododendron and holly.

6. The Vertical Forest Belts of Turkestan

In Turkestan there may be distinguished five vegetation belts:

a. The alkali belt. This is characterized by large stretches of woodland made up of a shrub, not unlike our mesquite, Halexylon ammodendron, and along the rivers of poplar (Populus diversifolia).

b. The cultivated belt. This comprises the most fertile loose soil, requiring only water to give wonderful yields; much of it is already under cultivation. The upper limit of this belt is at from 2,000 to 2,500 feet.

c. The broadleaf belt. This does not extend above 6,500 feet. Several species of poplar are present, also birch. The other species are black walnut (Juglans regia), cherry, wild apple and pistacia, with some ash and maple.

d. The coniferous belt. This is chiefly made up of spruce (Picea schrenkiana). The upper limit varies from 7,500 to 10,000 feet. Above it is found juniper.

e. The belt of alpine vegetation.

6. The Hardwood Forests of the Amur Region

The Amur region presents several distinct forest types. Here the pure coniferous forest of the north mixes with the broadleaf forest, walnut with "cedar", fir and birch with bamboo, and grapevine with spruce. Among the more

important hardwood trees, two species of oak are most common, Quercus mongolica, which is found along the middle course of the river Amur and Usuri, and Quercus crossesserrata, common in the Usuri region; cork wood (Phellodendron amurensis), which occurs along the middle course of the River Amur and in the south of the Pre-Amur region; two species of ash, Fraxinus mandshurica, which grows over the larger part of Amur and Pre-Amur territory, and Fraxinus rhynchophylla, which grows in the southern Usuri region; black walnut (Juglans mandshurica), is found in the Amur region, and in the central and southern part of the Pre-Amur region; a tree known as Phellopterus mandshurica, which produces a beautiful veneer; and two species of basswood (Tilia amurensis and Tilia mandshurica).

Methods of Selling Timber

The timber is sold both in private and state forests; (1) by the lot or area in case of clear cutting; (2) by quantity; in which case either the trees to be felled are marked or the trees to be left are marked; (3) by the tree; in this case the check is by the number of stumps.

Units of Measure

The universal wood measure in Russia is a cubic sajen, which means a stack of wood seven feet (1 sajen) high, seven feet long and seven feet wide. It is similar to our cord measure, except that the dimensions are different. A stack

of timber seven feet high, seven feet long, but only 3½ feet wide is one-half of a cubic sajen and will take, therefore, two of such stacks to make one cubic sajen. In some places, like on the River Volga, the unit of measure is a stack of wood five sajen (7 x 5 = 35 feet) long ("pisterik"); at other places the length is 10 sajen (70 feet) ("dissaterik"), most commonly, however, it is one sajen (7 feet) long. A cubic sajen contains, therefore, 343 cubic feet (7 x 7 x 7) of stacked wood. For purposes of estimating in all Government forests a normal sajen, equal to 200 cubic feet, is adopted as a unit. This is the solid contents of a cubic sajen. Instead of expressing the stand in board feet, the Russian foresters express it "normal sajen".

The contents of the trees is determined in cubic feet and the sum is divided by 200, which gives the number of "normal sajen" in the stand.

Other units of measure and trade names

Russian	American
1 arin	5.4837 in.
1 vershok	1.75 "
1 arshine	2 ft. 4 in.
1 sagene	7 ft.
1 versta	3,500 ft.
St. Petersburg standard, sawn timber . .	181 cu. ft. or 1,980 ft. bd. meas.
" " "	Hewn timber . . 150 cu. ft.
" " "	round timber . . 120 " "

Balance - spruce pulpwood cut into short lengths.

Battens - a board 2-2½ duims x 2-11 duims.

Boards - 1½-1 3/4 duims x 4-11 duims.

Deals - boards 2-4 duims x 4-12 duims and sides.

Load, sawn timber - 50 cu. ft.

" round " - 40 " "

Conclusions

1. Russia possesses the largest forest area of the world, containing the most valuable species used by the industries of the civilised world. That the export of timber is capable of great increase as compared with the forest area is shown in the following table:

	Timberland (acres)	Export of timber
Russia	1,320,000,000	$ 89,250,000
United States	500,000,000	134,437,000
Scandinavia	81,000,000	139,489,000
Austria-Hungary	65,000,000	79,200,000

2. How readily the timber export is growing and what an increasingly important part it assumes in Russia's trade balance may be judged from her export of timber into England for the last ten years as compared with Scandinavia and the United States (in per cent of the entire import to England):

	1903	1907	1909	1911	1913
Russian timber	39%	37%	46%	47%	51%
Scandinavian timber	33%	33%	35%	30%	30%
United States timber	33%	30%	27%	30%	25%

According to the Reconstruction Report of England, out of 10,431,500 "loads" of coniferous timber and pit wood imported into England during the year prior to the great war, 5,196,550 "loads" came from Russia.

3. Before the war, 45 per cent of all Russian exports came out through the Baltic ports, Petrograd, Kronstadt, Riga, Libau and Windau.

4. During the war a great change has taken place in the timber export of Russia which will become permanent. Sixteen million acres adjoining the Baltic provinces which supplied the bulk of export timber are in the fighting zone and have been ruined. The regions from which the export timber will take place are the north and north-western forest regions and Archangel will become the chief source of export.

5. The need of timber in the Allied markets offers wonderful prospects for the Russian timber industry. By the proper development of the country Russia will be able to deliver the bulk of the timber necessary for the Allied countries. It is very possible that in this line Russia will not meet serious competition either from Scandinavia or from the New World. As to Austria Hungary, she will have her own needs, and aside from this a big part of her rich Galicia was destroyed during the war.

6. The development of Russia's timber industry and the export of Russian timber to the European market means for Russia the practical solution of many of her financial difficulties. The development of the timber industry will create a favorable foreign trade balance and will assist in the payment of the national debt.

7. No other resources in Russia will be so easy to convert into cash as her timber.

8. It is of the utmost importance to England that the forest resources of northern and northeastern Russia, upon which she depends, should not fall under the control of German agents and middlemen. That the British Government realizes the situation is clearly shown by the fact that it has recently sent Professor Stebbing, of the University of Edinburg, to Iceland with the mission to visit Russia and report upon the actions to be taken by the British Government.

9. To prevent Germany from taking control of Russia's timber resources, it is essential to stimulate the development of the lumber and wood-using industries within Russia itself. As long as Germany will use Russia as a source of raw materials and prevent the development of the Russian lumber industry, the advantages will be on the side of Germany.

Great Britain and France are almost exclusively consumers of Russian sawn lumber and other manufactured forest products. German lumber industry is almost entirely built on Russian raw material, the manufactured products of which, as for instance paper, are later reimported to Russia. The development of the lumber industry in Russia will tend to eliminate Germany as the manufacturer and middleman of the Russian timber resources.

10. After the first revolution the provisional government made arrangements with the British government to lease directly to the latter blocks of timber, 500,000 acres in extent, for a period of from 30 to 35 years. The only condition upon which this lease was made was that the cutting should be made under the supervision of Russian foresters and that the material be worked over in Russia itself.

11. The Region of Archangel now has 50 sawmills.

12. These facts indicate the importance of Russian forest resources in her financial and economic rehabilitation and therefore should be considered in any plan which the Allies may adopt for the economic rehabilitation of Russia.

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
FORESTS OF EUROPEAN AND ASIATIC RUSSIA
LEGEND
(DENSITY EXPRESSED IN PERCENT OF LAND AREA)
CONIFEROUS FOREST
(Pine, Spruce, Larch and Fir)
25 to 50+ PERCENT
10 to 25 PERCENT
MIXED CONIFEROUS AND HARDWOOD FOREST
25 to 50+ PERCENT
10 to 25 PERCENT
HARDWOOD FOREST
(Birch, Beech, Oak, Elm and Basswood)
25 to 50+ PERCENT
10 to 25 PERCENT
PRAIRIE
SEMI ARID AND DESERT REGION
TUNDRA
MOUNTAIN TOPS AND ALPINE FLORA
BOUNDARIES OF TIMBER REGIONS
SCALE
0 200 400 600 800 MILES
ATLANTIC OCEAN
NORTH SEA
BALTIC SEA
BLACK SEA
CASPIAN SEA
ARAL SEA
WHITE SEA
SPITZBERGEN
IRELAND
ENGLAND
NORWAY
SWEDEN
FINLAND
GERMANY
AUSTRIA-HUNGARY
SERBIA
RUMANIA
BULGARIA
GREECE
CRIMEA
MEDITERRANEAN
TURKEY
PERSIA
AFGHANISTAN
BALUCHISTAN
INDIA
RUSSIA
TURKESTAN
SYRDARIA
KHIVA
KALSK
TURGAI
AKMOLINSK
SEMIPALATINSK
Kirghiz
KASHMIR
Kashgaria
Gulf of Bothnia
Gulf of Finland
Gulf of Oman
Sea of Azof
Gulf of Kara Bugas
Petrograd
Moscow
Archangel
Kazan
Samara
Orenburg
Tashkent
Samarkand
Bokhara
Askhabad
Meshed
Teheran
Kandahar
Quetta
Jacobabad
Hyderabad
Karachi
Bandar Abbas
Muscat
Sevastopol
Batum
Tiflis
Trebizond
Constantinople
Smyrna
Rostov
Saratov
Astrakhan
Kazan
Perm
Ekaterinburg
Tobolsk
Tomsk
Omsk
Irkutsk
Yakutsk
Khabarovsk
Vladivostok
Nikolaievsk
Petropavlovsk
Semipalatinsk
Kokand
Andijan
Kashgar
Yarkand
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Herat
Kushka
Yezd
Ispahan
Shiraz
Yarkand
Srinagar
Jammu
Amritsar
Lahore
Multan
Jeypore
Hyderabad
Jodhpur
Ajmir
Indore
Nagpur
Bombay
Poona
Madras
Trichinopoly
Colombo
Ceylon
Rangoon
Mandalay
Bhamo
Siam
Tonkin
Hanoi
Saigon
Cambodia
Malacca
Singapore
Sumatra
Java
Borneo
Celebes
Timor
Philippine Islands
Manila
Luzon
Mindanao
Sulu Archipelago
Formosa
Taihoku
Hong Kong
Canton
Amoy
Foochow
Ningpo
Shanghai
Nanking
Hankow
Ichang
Chungking
Yunnan
Kweichow
Kwangsi
Kwangtung
Hainan
Tsingtao
Chefoo
Tientsin
Peking
Shansi
Shensi
Kansu
Ordos
Mongolia
Gobi Desert
Urga
Kiakhta
Manchuria
Mukden
Harbin
Vladivostok
Nikolaievsk
Sakhalin
Yezo
Hokkaido
Japan
Nagasaki
Kobe
Osaka
Yokohama
Tokyo
Aomori
Hakodate
Kamchatka
Petropavlovsk
Bering Sea
Aleutian Islands
Behring Island
Copper Island
Commander Islands
Kuril Islands
Okhotsk
Sea of Okhotsk
Sea of Japan
Yellow Sea
Korea
Seoul
Fusan
Gensan
Chemulpo
Pyengyang
Wonsan
Yalu R.
Amur R.
Ussuri R.
Sungari R.
Liao R.
Hoang Ho
Yangtze Kiang
Si Kiang
Mekong R.
Irrawaddy R.
Salween R.
Brahmaputra R.
Indus R.
Ganges R.
Godavari R.
Kistna R.
Nerbudda R.
Tapti R.
Mahanadi R.
Irtish R.
Ob R.
Yenisei R.
Lena R.
Kolyma R.
Indigirka R.
Yana R.
Olenek R.
Anadyr R.
Volga R.
Don R.
Dnieper R.
Dniester R.
Vistula R.
Oder R.
Elbe R.
Rhine R.
Danube R.
Po R.
Tiber R.
Ebro R.
Guadalquivir R.
Tagus R.
Douro R.
Loire R.
Seine R.
Thames R.
Severn R.
Shannon R.
Liffey R.
Clyde R.
Forth R.
Tay R.
Dee R.
Mersey R.
Humber R.
Wash
Bristol Channel
English Channel
Irish Sea
Strait of Dover
Strait of Gibraltar
Strait of Bosporus
Strait of Dardanelles
Strait of Malacca
Strait of Sunda
Strait of Formosa
Strait of Tsushima
Strait of Korea
Strait of Behring
Strait of Hormuz
Strait of Bab-el-Mandeb
Suez Canal
Red Sea
Persian Gulf
Gulf of Aden
Gulf of Oman
Gulf of Tonkin
Gulf of Siam
Gulf of Martaban
Gulf of Cambay
Gulf of Kutch
Gulf of Manaar
Gulf of Pechili
Gulf of Liaotung
Gulf of Korea
Gulf of Tartary
Gulf of Anadyr
Gulf of Penzhinsk
Gulf of Alaska
Gulf of Finland
Gulf of Riga
Gulf of Bothnia
Gulf of Archangel
Gulf of Obi
Gulf of Yenisei
Gulf of Lena
Gulf of Kolyma
Gulf of Indigirka
Gulf of Yana
Gulf of Olenek
Gulf of Anadyr
Gulf of Penzhinsk
Gulf of Alaska

FRANZ JOSEF LAND
NEW SIBERIAN IS.
TAIMUR PEN.
ARCTIC OCEAN
KARA SEA
BARENTS SEA
Cape Chelyuskin
Lena R.
Yenisei R.
Ob R.
Irtish R.
Aldan R.
Vilui R.
Indigirka R.
Kolyma R.
Anadyr R.
Gulf of Anadyr
BERING SEA
ALEUTIAN IS.
COMMANDOR IS.
KAMCHATKA
OKHOTSK SEA
KURILI IS.
SAKHALIN
Alexandrovsk
Nikolaevsk
Mouth of Amur
Strait of Tartary
Lower Tunguska R.
Stony Tunguska
Upper Tunguska
SEISK
Tomsk
Marilinsk
Krasnoyarsk
Minusinsk
Barnaul
Biysk
Kuznetsk
Kolyvan
Tashkent
Semipalatinsk
LATINSK Steppe
Kobdo
Ulansutai
Urga
Uliassutai
Trumchi
TARBAGATAI MTS.
ALTAI MTS.
JASAKTU
DZUNGARIA
Desert
URIANGHAI
KOBDO
TUSHETUGA
URGOI SILINGOL
TSETSENKHERIM
SAINNOIN
YABLONOI MTS.
STANOVOI MTS.
YABLONOI MTS.
TRANSBAIKALIA
Nerchinsk
Chita
Irkutsk
Lake Baikal
Verkhneudinsk
Selenginsk
Kiakhta
HELUNGZIANG
CHURIA
Tsitsihar
Harbin
Changchun
Kirin
Mukden
Port Arthur
Dalny
Yingkow
Antung
Gensan
Fusan
Seoul
Chemulpo
Gulf of Pechili
Tientsin
Peking
Kalgan
Dolon Nor
Kuku Khoto
Kweihwa
Kweihwa Cheng
Jehol
Chengte
Liaotung Peninsula
Liaotung Gulf
Yalu R.
Tumen R.
Sungari R.
Nonni R.
Hsingan Ling
Khingan
Yablonoi Mts.
Stanovoi Mts.
Yablonoi Mts.
Yakonol Mts.
Verkhoyansk Mts.
Kolyma Mts.
Anadyr Mts.
Kamchatka Mts.
Sea of Japan
Japan
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Hondo
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Niigata
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Gifu
Tsuruga
Shizuoka
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Wakayama
Kobe
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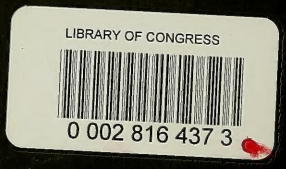
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